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BRITISH AND FOREIGN.

EDITED BY

JAMES BRITTEN, F.L.S.,

SENIOR ASSISTANT, DEPARTMENT OF BOTANY, BRITISH MUSEUM (NATURAL HISTORY), SOUTH KENSINGTON.

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THE

JOURNAL OF BOTANY

BRITISH AND FOREIGN.

SVANTE MURBECK ON GENTIANS.

By William H. Beeby.

In the *Acta Horti Bergiani* (Band 2, No. 3)* are published the results of Herr Svante Murbeck's *Studien über Gentianen aus der Gruppe* Endotricha *Froel.*, for a copy of which I am indebted to the author. The plants treated of include *Gentiana campestris* and *G. Amarella*, each of which is divided into two subspecies; also *G. baltica* and *G. uliginosa*, species allied respectively to the two above mentioned. Since four, or perhaps five, of these six forms are found in Britain, some account of them may be of interest to those who study our native plants.

The table below, adapted from the one given by Herr Murbeck, shows the relationship of the several plants. It should of course be borne in mind that in Scandinavia generally, and in this paper, the asterisk is used to indicate a subspecies.

Annual. Basal leaves ovate-lanceolate.

Hab. Lowlands of the N. Sea and Baltic region.

G. baltica Murb. | *G. uliginosa* Willd.

Biennial. Basal leaves spathulate.

Pretty widely distributed.

G. campestris L.

**suecica* Murb. [Willd.).

**germanica* Murb. (non

Widely distributed.

G. Amarella L.

**lingulata* Ag.

**axillaris* Murb.

The British specimens seen by Herr Murbeck are in the collections of Mr. A. Bennett, Rev. E. S. Marshall, and myself. In the following notes characters (extracted chiefly from Murbeck's treatise) sufficient for identification are given; for fuller details the author's interesting work should be consulted.

A. Calyx 4-partite, the two broadly ovate segments much larger than, and enclosing, the two smaller segments.

Gentiana baltica Murb.—Annual. Basal leaves few, ovate or lanceolate, broadest below or at the middle. Corolla-tube for the most part shorter than the calyx, rarely longer. Fl. mid August to October. — W. Cornwall, Lizard Downs. S. Devon, Roborough

* Isaac Marcus, Stockholm, 1892.

Down. (E.?) Norfolk, St. Faith's Newton. Carnarvon, near Tremlyd Point. — *Eng. Bot.* tab. 237; the specimen figured was sent by Mr. William Mathews, from Bury St. Edmunds, Suffolk, Sept. 6, 1792.

G. CAMPESTRIS L.—Biennial. Basal leaves in a rosette, spathulate, broadest above the middle. Corolla-tube for the most part longer than the calyx, rarely shorter.

**suecica* Murb.—Internodes usually much longer than their leaves. Middle and upper stem-leaves strap-shaped or oblong, rounded or obtuse at the apex; middle ones erect or erect-patent. Fl. mid June to end of July; in high northern or alpine regions, August.—Not known as British, but one of my Shetland gatherings approaches it in its very long internodes.

**germanica* Murb. (non Willd.). — Internodes rather shorter than or slightly longer than their leaves. Middle and upper stem-leaves lanceolate or ovate-lanceolate, more or less acute at the apex; middle stem-leaves spreading, upper ones generally strongly so. Fl. end of July to September. — The common British plant; but some of the records may likely prove to belong to *G. baltica*.

It is interesting to find that Herr Murbeck, besides studying these plants in their native habitats, has tested the permanence of their characters by cultivating them both for several years (1888–1890, and 1891–1892). Briefly, he finds that the seeds of both species germinate in the spring. *G. baltica*, besides the cotyledons which persist and are still green at flowering-time, produces a few root-leaves from which springs the stem which flowers and fruits the first year. *G. campestris*, on the other hand, produces a rosette of rather numerous leaves, but develops no further the first year. This rosette withers at the end of the season, and the following spring there appears a second rosette of leaves from which rises the flower-stem.

B. Calyx 5- (or 4-) partite, segments all lanceolate or linear-lanceolate, subsimilar, not overlapping.

G. ULIGINOSA Willd. — Annual. Basal leaves few, ovate or lanceolate, broadest below or at the middle. Corolla-tube equalling or slightly exceeding the calyx. Fl. mid-August to October.—Britain is not among the countries whence Herr Murbeck has seen specimens, but Nyman records the plant for Scotland.

G. AMARELLA L.—Biennial. Basal leaves in a rosette, strap-shaped or spathulate, broadest above the middle. Corolla-tube for the most part longer than the calyx, rarely shorter.

**lingulata* C. A. Agardh. — Middle internodes mostly much longer than their leaves. Middle and upper stem-leaves strap-shaped or oblong, rounded or obtuse at the apex; middle ones erect or erect-patent. Fl. mid June to end of July; in the extreme north, August. — Known in Britain only as our *G. Amarella* var. *præcox*, referred to this subspecies. The varietal name is retained for the British plant, which, besides flowering about a month earlier (May–June!), also differs from the type in being a dwarfer plant, with fewer internodes, which are scarcely longer than their leaves.—Specimens have been seen by Herr Murbeck from Dorset,

Durlstone Head. Isle of Wight, Steephill and Bembridge Downs. Surrey, Riddlesdown and Banstead Downs. It seems probable to me that the British plant may be merely a state of *lingulata*, and not a variety, a point which could be decided by cultivating the two plants side by side.

**axillaris* Murb. — Middle and lower internodes rather shorter than or slightly longer than their leaves. Middle and upper stem-leaves ovate-lanceolate or lanceolate, more or less acute at the apex; middle stem-leaves usually spreading, upper ones generally greatly so. Fl. end of July to September.—The common British plant.—*Eng. Bot.* tab. 236.

The development of *G. uliginosa* and *G. Amarella* appears to be homologous with that of *G. baltica* and *G. campestris* respectively; indeed, so strikingly close is the parallel between the two groups that it cannot fail at first to suggest artificiality of treatment. Hence the confirmation of Herr Murbeck's conclusions, resulting from his cultivation of the plants, becomes all the more valuable.

Judging from the comparative distribution of the various forms, and from the widespread distribution of *G. campestris* and *G. Amarella*, the author concludes that these latter are the ancestral types, and that they existed at the time of the last glacial epoch; then, as the ice began to recede from the lowlands, as the valleys became warmer, and the period available for growth in a single season sensibly lengthened, opportunity was afforded for the preservation of such annual forms as might arise through variation, and thus there were eventually evolved the species *G. baltica* and *G. uliginosa*, the characters of which have now become so fixed that Herr Murbeck states that intermediates between them and their respective allies are not now to be found, even where the habitats of the plants overlap.

After examining the specimens given me by Herr Murbeck, and comparing them and various British specimens with his descriptions, I think that his conclusions are certainly entitled to acceptance.

There is one point, however, on which I am sorely at variance with Herr Murbeck, *viz.*, that of nomenclature. Some of the above names are given by me in an abbreviated form, but this is how some of them read as given by the author of them:—

G. campestris L. **suecica* (Froel. pro var.) Murb.
**germanica* (Froel. pro var.) Murb.
G. Amarella L. **axillaris* (Schmidt) Murb.

the last-named being the equivalent of *Hippion axillare* Schmidt. Had the brackets and enclosed words been omitted, the *form* of the names would have been legal. The case of *G.* **germanica* is, however, open to much graver objection. The name stood originally *G. campestris* L. *β. germanica* Froel. (1796), while *G. germanica* Willd. was not published until the following year, according to the dates quoted in the treatise. On this account Herr Murbeck, in raising Froelich's variety to the rank of subspecies, instead of giving it a new name, retains the varietal name *germanica*, and makes it

supersede *G. germanica* Willd., which is called *G. Wettsteinii* Murb. This course, I think, few, if any, botanists will concur in, or follow. I think rather that most will retain Willdenow's name, and that they will, in doing so, be acting in accordance with the Laws. This will necessitate giving a fresh name to *G. *germanica* Murb., so that the result is that our nomenclature is encumbered with three new names, instead of the one new name that alone would have been necessary had the course indicated above been adopted. The other two names quoted are not, of course, in binomial form; but they have at least the merit of possessing a definite meaning. Much must not be said, therefore, concerning such matters of detail so long as we, in this country, make use of, and advocate the use of, such "specific" names as *Ranunculus heterophyllus* Web. ex parte, *Rumex aquaticus* L. pro parte, or *Sparganium ramosum* Huds. pro parte. Such expressions, like those quoted above, are contrary to the Laws; while at the same time, unlike those quoted above, they are useless, because indefinite—giving neither any clue to, nor authority for, nor any reference to a description or other publication of, the particular "part" intended.

BOTANICAL NOTES FROM NORTH CARDIGANSHIRE.

By J. H. Burkill, B.A., and J. C. Willis, M.A.

These notes are the result of a short stay in the county of three weeks, divided equally between the following places:—Devil's Bridge, Pont Erwyd, and Pont-rhyd-fendigaed. The region explored includes Plinlimmon and the hills to the south of it as far as Llyn Berwyn, the valleys of the Rheidol and Ystwith, the upper part of the valley of the Teifi, and also the Mynydd Bach hills. The geological formation is wholly silurian. The literature referring to the botany of Cardiganshire is meagre; the following table summarises it. Recorded in:

1. Watson's *Topographical Botany*, 2nd ed., 1883 .	491 species.
2. Morgan's *Flora Ceretica Superioris*,* 458 species, of which Watson does *not* record	125 ,,
3. E. Lees, in *Phytologist*, i. p. 38,* 70 species, of which Watson or Morgan do *not* record . . .	5 ,,
4. Report, Scientific Society of the University College of Wales, 1892–3. 45* species, of which the three preceding do *not* record	9† ,,
Observed by us, 332 species, of which the preceding do *not* record	30 ,,
Total (Phanerogams and Vascular Cryptogams) .	660 ,,

* These papers include some plants not found within the boundaries of Cardiganshire; these we have not included in this statement.

† Or 8, if *Lamium Galeobdolon* was not found on the Cardigan side of the Llyfnant.

Out of this total, several are plants introduced into Britain, and a few seem to be recorded by error, e. g., *Primula elatior* Jacq. (Morgan), and *Polygonum maritimum* Linn. (Morgan and Lees).

Morgan's *Flora Ceretica Superioris* includes a radius of sixteen miles from Aberystwith, thus comprising nearly all the area explored by us; but only in few cases do our localities for the less common species coincide with his. It is curious, considering how distant the journeys made evidently were, and how he investigated "in the autumn of 1848 and the spring and summer of 1849," that he records so few stations for common plants; thus, *Montia fontana* and *Callitriche* only for Llanbadarn; *Scabiosa Succisa* only for Constitution Hill. Many other instances might be given showing that, however accurate, Morgan's *Flora* cannot be regarded as approaching completeness.

It is not intended here to give a full list of the plants observed, —such information we hold at the service of any botanist who may desire it; but the following contains what in our eyes seems of the most importance. Signs used:—

* Species hitherto unrecorded for the county.
(*) Segregate species, apparently noted, but under an aggregate name.
† Species not recorded for the county in Watson's *Topographical Botany*, but mentioned by other writers.
[ ] Aliens *not* likely to hold their own for long.

(*) *Ranunculus hederaceus* L. Abernant. — b. *omiophyllus* Ten. Pont-rhyd-fendigaed. — *R. Flammula* L., b. *pseudo-reptans* Syme. On the shore of several llyns.

† *Aquilegia vulgaris* L. Roadside near Henffordd Arms, probably an introduction. Cf. Report, Scientific Society of Univ. College, quoted above.

† *Meconopsis cambrica* Vig. Devil's Bridge; Nant Rhyddnant; a rare plant in this district.

Chelidonium majus L. Common in the Rheidol Valley from Capel Bangor to Pont-pren-plwcca; Strata Florida Abbey.

* *Fumaria pallidiflora* Jord. Ty-llwyd-isaf; Goginan; Ty Cam; Llanbadarn.— *F. confusa* Jord. Near Henffordd Arms; near Glan Rheidol; Capel Bangor; Llanfihangel Lledrod.

* *Subularia aquatica* L. Llyn Hir; Llyn Egnant; Llyn Gynon.

* *Brassica Rapa* L. Henffordd Arms; Ty Cam; Llanfihangel Lledrod.

* *Raphanus Raphanistrum* L. Not unfrequent in the hills up to 1020 ft.

* *Viola Reichenbachiana* Bor. Fairly common.—† *V. tricolor* L. Yspytty Cynfyn; Castell-fan-grach.—† *V. arvensis* Murr. Yspytty Cynfyn.—*V. lutea* Huds. The type and the form *amoena* Syme are both abundant. Our highest and lowest records are at 1640 and 680 ft.

(*) *Polygala serpyllacea* Weihe. Common in the hills.

Silene maritima With. We traced this species from Aberystwith up the Ystwith river to a point, Nant Cwm Du, sixteen miles in a straight line from the sea, at 800 ft. It grows on the rocks at the

side of the river, possibly depending largely for its maintenance on the lead mine refuse in it. It occurs again near Pont-rhyd-fendigaed, on the *débris* of a mine. We compared fresh specimens from the coast and from inland, without observing any difference.

Montia fontana L. Common, but seemingly only in the form *rivularis* Gmel.

† *Malva rotundifolia* L. Near Glan Rheidol, only in one spot.

[† *Linum usitatissimum* L. Roadside, Capel Bangor.]

* *Trifolium hybridum* L. Pont-pren-plwcca; Gelli-fach; Capel Bangor.

Vicia Orobus DC. Blaen Penal. — † *V. sativa* L. Near Glan Rheidol.— [* *V. villosa* Roth. Cornfield, Pant Glas.]

† *Lathyrus macrorrhizus* Wimm. Very common in some places, Yspytty Cynfyn; Piran Falls; Yspytty Ystwyth; Pont-rhyd-fendigaed.

* *Rubus fissus* Lindl. In the valleys above Strata Florida Abbey, at the top limit of the bramble.—*R. rusticanus* Merc. is confined to the lower valleys. — *R. leucostachys* Sm. Under Pen-y-Banau.— * *R. Koehleri* Weihe. Pont-pren-plwcca; Strata Florida. We have another species, which appears to be *R. villicaulis* Koehl.

* *Potentilla Fragariastrum* Ehr. Nant Rhyddnant (1100 ft.); Ty-llwyd-isaf; Henfforddd Arms; under Pen Drosgol (1030 ft.); near Glan Rheidol; common about Pont-rhyd-fendigaed; Llanfihangel Lledrod. — *P. Tormentilla* Neck. grows up almost to the top of Plinlimmon (2380 ft., but only sparingly above 1900 ft.).

* *Alchemilla vulgaris* L. Eglwys Newydd; near Strata Florida Abbey; Tregaron.

† *Pyrus Malus* L. Capel Bangor.

† *Sempervivum tectorum* L. This is frequently planted on cottages to help in maintaining the slates in position; only in such places, frequently in ruins, we saw it, Doubtless Morgan's locality had a similar origin.

† *Myriophyllum spicatum* L. Llyn Rhyddnant; Llyn Egnant; Llyn Teifi; Llyn Hir; Llyn y-Gorlan; Llyn Gynon; Llyn Crug-nant.

Callitriche hamulata Kuetz., b. *pedunculata* DC. Shore of Llyn Teifi. *C. stagnalis* Scop. and *C. hamulata* Kuetz. are both common; the commonest form is the typical *C. platycarpa* Kuetz.

* *Epilobium angustifolium* L. Popty, about a ruined cottage; Ystrad Meurig, on the railway embankment: probably not a native in this district.

Circæa lutetiana L. We observed the typical plant at the Devil's Bridge.—* *C. alpina* L. Abernant (thick wood by a watercourse, 150 ft.); near the Henfforddd Arms (roadside, 600 ft.).

Pimpinella Saxifraga L. Frequent. In Nant Rhyddnant, in a rocky gully facing south, at 1200 ft., probably by an upward trespass.

* *Silaus pratensis* Bess. Yspytty Cynfyn.

† *Heracleum Sphondylium* L. Fairly common.

† *Asperula odorata* L. Devil's Bridge; under the rocks of Bryn-bras.

Scabiosa Succisa L. Extends up on the average to 1220 ft.

(12 readings). The highest records are—Llyn Cerig-llwydion-isaf, at 1640 ft. (Radnorshire); Cwm Ergyr (1400 ft.); near Teifi Llyns (1440 ft.).

**Antennaria margaritacea* R. Br. Nant Berwyn (1100 ft.), a patch on the hillside facing north.

**Bidens cernua* L. Near Glan Rheidol, but not growing with the following.—†*B. tripartita* L. Near Glan Rheidol; under Pen-y-Banau.

†*Chrysanthemum Leucanthemum* L. Yspytty Cynfyn; Tregaron.

†*Matricaria Chamomilla* L. Felin-fawr; Ystrad Meurig.

†*Tanacetum vulgare* L. Pont-pren-plwcca, probably introduced.

Tussilago farfara L. Up to 1420 ft.

(*)*Arctium minus* Schk. Cnwch-yr-Arian; Felin-fawr; Llanbadarn; Llanfihangel Lledrod.

†*Hieracium vulgatum* Fr. Devil's Bridge.

†*Leontodon hispidus* L. Rheidol Valley.

Lobelia Dortmanna L. Llyn Hir; Llyn Egnant; Llyn Fach; Llyn Gynon; Llyn Crugnant.

Wahlenbergia hederacea Reichb. Pont-pren-plwcca; under Bryn-bras; near Dyffryn Castell Hotel (850 ft.); under Pen Drosgol (1050 ft.); Trawscoed.

Vaccinium Oxycoccos L. Plinlimmon, at 1560 ft.; probably this is Morgan's locality. — †*V. Vitis-idæa* L. Cefn Blaen Myherin (1690 ft.); with *V. Oxycoccos* on Plinlimmon (1560 ft.); Dihewyd; Aber-rhyddnant (780 ft.).

†*Lysimachia nemorum* L. Parson's Bridge; Nant Myherin up to 1060 ft.; Nant Rhyddnant to 1200 ft.; Abernant; Cwm Ystwyth up to 1040 ft.; Llanfihangel Lledrod.

Anagallis tenella L. Trawscoed.

[**Vinca major* L. Llanbadarn; escape.]

**Gentiana campestris* L. Llantrissant; near Strata Florida Abbey.

[**Polemonium cæruleum* L. Gelli-fach; escape.]

Linaria vulgaris Mill., b. *latifolia* Bab. With type, Castell-fan-grach.

†*Veronica agrestis* L. Capel Bangor; Pont-rhyd-fendigaed.—†*V. arvensis* L. Aberrhyddnant. — *V. serpyllifolia* L. Highest records:—Nant Rhyddnant, 1200 ft; Bwlch-nant-yr-arian, 1020 ft.

Bartsia Odontites Huds., b. *serotina* Reichb. Ty-llwyd-isaf; Pont-rhyd-fendigaed.

Utricularia minor L. Round Llyn Eiddwen; bog between Llyn Ddu and Llyn Crugnant, at 1600 ft. Watson's extreme of 600 ft. in Scotland seems to be too low. Sendtner‡ records it as extending to 2450 ft. in South Bavaria; Dalla Torre‡ at 4920 ft. in the Alps; Magnin§ at 3570 ft. in the Jura. On the other hand, Sendtner makes *Montia* cease at 1500 ft.,—a considerable distance below *Utricularia minor*,—while Watson found it at 3300 ft. in the East Highlands.

**Mentha arvensis* L. Yspytty Cynfyn; Llantrissant; near Glan Rheidol; Trawscoed.

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‡ Schenk, *Biologie der Wassergewächse*. Bonn, 1886, p. 156.

§ Magnin, *Recherches sur la végétation des lacs du Jura*. Revue Générale de Botanique, 1893, p. 241.

* *Calamintha officinalis* Moench. Frequent.

Scutellaria minor L. Penuwch.

† *Galeopsis speciosa* Mill. Ty Newydd, Devil's Bridge; under Pen-y-Banau.

* *Littorella lacustris* L. Llyn Ieuan; Llantrissant; Pond-yr-oerfa; Llyn Teifi; Llyn Hir; Llyn Egnant; Llyn Fach; Llyn-y-Gorlan; Llyn Crugnant; Llyn Berwyn; Llyn Eiddwen; Llyn Fanod.

† *Atriplex patula* L. Tregaron; Pont-rhyd-fendigaed.

† *Polygonum Convolvulus* L. Ty Cam.

† *Euphorbia Helioscopia* L. Yspytty Cynfyn; Henfordd Arms; Llanfihangel Lledrod.

Urtica dioica L. A septal plant up to 800–900 ft.; beyond this it is dependent on man; our highest records are for places where man has disturbed the ground, *i. e.*, under walls of ruined cottages or sheep-folds. Highest record, Hengae, 1350 ft.—*U. urens* L. Hen Hafod (1170 ft.), on a manure-heap; seen nowhere else in the hills.

* *Betula alba* L. Bwlch-nant-yr-Arian; Gors-goch-lan-Teifi; certainly not planted in these places. Branches of this plant may be seen in the peat bogs at greater heights than these, testifying how it has existed over wide stretches of country. Blytt‡ has shown how the remains of generations of forests overlie one another in the peat bogs of Norway, leaf trees below Coniferæ, tracing this as due to alternating wet and dry periods. A similar change must have happened to destroy the birch trees in Cardigan, and cause them to be buried in layer after layer of Sphagnum and other peat plants.

Salix aurita L. Frequent, becoming a dwarf plant under 3 ft. high in the following upland situations:—Top of Pen-y-Banau (1150 ft.); Llyn Teifi (1410 ft.); under Pen Drosgol (1060 ft.); Bwlch-nant-yr-Arian (1020 ft.). The catkins were bursting under Pen Drosgol on Sept. 6th, 1893.

Narthecium Ossifragum Huds. Highest records:—Near Llyn Ddu (1660 ft.); Cefn Blaen Myherin (1440 ft.).

† *Juncus effusus* L. Pentre Brunant. — *J. lamprocarpus* Ehrh., b. *nigritellus* Don. Bryn-per-fedd; Devil's Bridge.

† *Luzula maxima* DC. Frequent in the hills.—*L. multiflora* Lej., b. *congesta* Koch. Rhos Elan.

* *Sparganium simplex* Huds. Pond Llewernog.

Lemna minor L. Very sparingly in one place at Pont-rhyd-fendigaed. We were surprised at the rarity of this, the only *Lemna* observed.

* *Elisma natans* Buchenau. Llyn Egnant; Llyn-y-Gorlan; Llyn Gynon; Llyn Eiddwen; Llyn Fanod; Pond-yr-oerfa.

* *Scirpus fluitans* L. Llantrissant; above Eisteddfa-gurig; Pond Syfydren.

* *Carex limosa* L. Llantrissant.— * *C. vesicaria* L. Not uncommon.

* *Holcus mollis* L. Devil's Bridge; Blaen Myherin; Cwm Ystwyth; Pont-rhyd-fendigaed.

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‡ Blytt, Essay on the Immigration of the Norwegian Flora during alternating rainy and dry periods. Christiania, 1876.

[* *Avena strigosa* Schreb. Castell-fan-grach; Pont-rhyd-fendigaed.]

† *Melica uniflora* Retz. Parson's Bridge.

† *Poa pratensis* L. Common near Aberystwith, &c.

Festuca ovina L., *vivipara*. Summit of Plinlimmon, by the big cairn, 2460 ft.

Lolium perenne L. Careful search revealed only the awnless form in the hills; v. *aristatum* Schum. was found in the lower country at Capel Bangor.

Pteris aquilina L. Our top limit for the bracken is at 1500 ft.; the mean of readings at 13 different places, mostly facing south, is 1270 ft.

† *Lastrea dilatata* Presl. Frequent. Devil's Bridge; Henfforddd Arms; Llanfihangel Lledrod; Llyn Hir (1400 ft.).

Lycopodium Selago L., *L. clavatum* L., and *L. alpinum* L. All common. They occur most frequently about the top limit of the bracken. *L. Selago* was observed growing with *L. alpinum* at the top of Plinlimmon (2460 ft.). It and *L. clavatum* were seen at Llettybach (facing north), at 210 ft. *L. alpinum* was not seen below 700 ft. (under Bryn-bras, facing north-east, no *Pteris*); and *L. clavatum* was not observed above 1680 ft., but probably may be found at greater heights.

From our observations we find that Watson's agrarian zone is more restricted in this neighbourhood than might be expected. If the bracken grows to 1900 ft. in the East Highlands, we should expect to get it possibly at 2300 ft., or at any rate 2000 ft. in Mid Wales. Watson gives the average for the south face of the Grampians as 1500 ft.; our average is 1270 ft. Thus it appears that the arctic zone is nearer sea-level in Mid Wales than in the Highlands. We may compare other heights, recorded for various parts of Britain. All the following are given in feet:—

	Peak District.				
	Matlock.*	Buxton.†	Cardigan.	Lake District.‡	E. Highlands.§
Highest point in district.....	1100	1750	2460	3206	4295
Limit of cultivation.....	——	——	1100	——	1600
,, *Pteris*, extreme	——	1650	1500	1800	1900
,, ,, average	——	——	1270	——	1500
,, *Scabiosa Succisa*	900	1200	1640‖	2400	2550
,, *Lysimachia nemorum* .	——	——	1200	1680	2400
,, *Veronica serpyllifolia*.	——	1050	1200	1500¶	2100¶
,, *Urtica dioica*	1050	1500	1350	1740	2400
,, *Salix aurita*	——	1500	1410	1110	2100
,, *Potentilla Tormentilla*	1050	1650	2380	3000	3300

* Baker and Newbould, Notes on the Flora of Matlock, *Journ. Bot.* xxii. p. 334. 1884.

† Baker, On the Upland Botany of Derbyshire, *Journ. Bot.* xxii. p. 6. 1884.

‡ Baker, A Flora of the English Lake District. London, 1885.

§ Watson, *Cybele Britannica*. London, 1847.

‖ This extreme was in Radnorshire, ½ mile from the Cardigan boundary. The locality is rocky, and we may have an upward trespass. Elsewhere the limit was usually below 1400 ft.

¶ The variety *humifusa* Dicks. ascends higher, to 2700 and 3750 ft.

We find that the Plinlimmon region is in this respect similar to the High Peak region, but dissimilar to the Lake region and the East Highlands. The higher and more mountainous the country is, the higher is the limit of any species; in other words, within certain limits plants are influenced by the proximity of the summit of a mountain, and prevented from approaching it. Further instances may easily be added to those above. Using Baker's test of the Fruticose Rubi (exclusive of *R. fissus*) to determine the top limit of the mid-agrarian zone, we find it to end about 750 to 850 ft. This is again lower than Watson's limit in the East Highlands.

The flora has an individuality of its own,—not altogether unexpected,—apart from the prevalence of peat bog plants, e.g., *Narthecium Ossifragum*, *Potamogeton polygonifolius*, *Viola palustris*, *Juncus squarrosus*, *Eriophorum*, &c. This individuality shows itself in the absence of *Papaver*,* *Ballota nigra*, *Petasites vulgaris*, *Lamium album*, and *Inula dysenterica;* in the rarity of *Chrysanthemum Leucanthemum*, *Bromus*, *Malva rotundifolia*, and *Lemna;* in the numerical preponderance of plants of *Cerastium glomeratum* over *C. triviale*, and of Müller's† shade form of *Euphrasia officinalis* over the larger form; and in the abundance of *Chrysanthemum segetum*.

In calculating altitudes we have made as much use as possible of the last Ordnance Survey Maps, and have thereby checked the readings of our aneroid barometer. In conclusion, we desire to thank Professor Babington and Mr. H. Groves for several kind suggestions, and also the former for the use of his valuable herbarium.

PRIMARY SUBDIVISIONS IN THE GENUS SILENE.

By F. N. Williams, F.L.S.

It is a quarter of a century since Paul Rohrbach, whose early death from consumption cut short a promising career and was a great loss to science, enriched systematic botany with an elaborate analysis of the genus *Silene*.‡ For doggedly pursued research of essentially Teutonic braud, and capacity for laborious discrimination, it compares with Engler's monograph of *Saxifraga* and Hausskuecht's monograph of *Epilobium*.

Since 1868 a large number of new species have been described (especially from Eastern countries), and much material for the elucidation of previously described species has been accumulated and in part examined: the re-adjustment of groups of species has proceeded with the examination of new material: the affinities of species among themselves both in their relation to systematic position and to geographical distribution have been more critically studied: and in a matter subsidiary to these, in the direction of precision and uniformity, conflicting schools of nomenclature have

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* Morgan records *Papaver Rhœas*. We did not see it.

† Hermann Müller. *Fertilisation of Flowers*. London, 1883, p. 449.

‡ *Monographie der Gattung*. Leipzig, 1868.

formulated and codified their rules, requiring here and there a change of name. So that in a revision of the genus much has to be reconsidered.

In a previous paper* I essayed to point out that the more the genus *Lychnis* is regarded in a sense restrictive of its Linnean definition, the better understood will be the affinities of allied genera, and that a redistribution of many of the species usually included in *Lychnis* will greatly facilitate the study of the relations of the *Silene* group of genera. The genus *Silene*, as understood and circumscribed by Alexander Braun, included a large number of species which formed a very natural group sufficiently marked off from other genera, as defined at that time, but very difficult to form into subsidiary groups, on account of the absence of well-defined primary and secondary characters within the limits of the genus which might be utilized for the purpose.

The point which I especially wish to draw attention to is the extreme inconvenience of regarding the mode of præfloration in the petals as a primary character. Boissier points out that Alexander Braun first drew attention to this character in the genus, and the speciousness of such a line of cleavage is best explained in his own words, which are here translated from *Fl. Orientalis*, vol. i.:—"A genus very difficult to break up into groups of species, since the characters for defining sections are either absent or not strongly marked. Thus Godron demonstrated that all forms of inflorescence which were met with in the genus, the dichotomy, the panicle, the unilateral raceme, are only modifications of the cyme, and that they pass one into another in allied species, and even in plants of the same species. The number of the nerves of the calyx varies in plants otherwise alike in all their characters. Alexander Braun pointed out a character depending on the imbricative (quincuncial) æstivation of certain species, but this mode of overlapping of the petals in æstivation in the genus is not really quincuncial (arising, as it were, from spiral insertion of the petals), but is a deformation of convolute æstivation (arising from verticillary insertion), to which in allied species and often in the same species it returns. The seeds which are generally canaliculate on the dorsal surface may become plane, then convex, and finally, in *Heliosperma*, carinate († with the rows of tubercles transformed into crested spines). With these considerations, I have not proposed sections such as it would be incumbent on a future monographer of the whole genus to specify, but I have attempted to arrange the Eastern species in natural groups, as far as I was able, according to general characters and habit in the absence of definite and well-marked characters."

Dr. Christ draws a harrowing picture of Boissier racking his brains in his varied and repeated endeavours to select such characters as might form the basis for the main groups in the proposed arrangement of the Eastern species; how he tried first one character, and then another, and afterwards a combination of two or more, only to find that his hypothetical sections invariably either overlapped one another or failed to include some of the species.

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* *Journ. Bot.* 1893, p. 167. † Not in the original.

Rohrbach first of all divides the genus into two subgenera :—(1) *Behen*, in which the leading character is "æstivatio petalorum imbricativa"; and (2) *Silene* proper, in which the leading character is "æstivatio petalorum alternatim contorta." In connection with this I should like to refer to an interesting letter from Alexander Braun to J. Gay, preserved in Herb. Kew. In this letter diagrams are given of the mode of overlapping of the petals in æstivation in *Silene Pumilio;* and quoting from a letter from Pacher, he says that usually the petals are imbricate in æstivation in this species, but that this is not constant, and occasionally they are contorted. I consulted the late Sereno Watson (who has studied the North American species of *Silene*) as to his views on the importance of these primary characters. In a letter received from him only a few weeks before his lamented death, he says :—"I have never considered the characters that you mention of any special importance, and have paid them no attention. If *S. Douglasii* and *S. nivea* are to be separated from our other species on the imbrication of the petals, it is evident that the division is not a natural one." Again, "æstivatio *alternatim* contorta" is somewhat obscure, but Mr. Watson points out that it appears to be illustrated in Eichler's *Blüthendiagramme*, on p. 106, fig. 41 A; and is what is called "antidromy" or "heterodromy," the petals in the flowers of the axis overlapping in one direction, and those of the branches in the opposite. Now the species of *Silene* are difficult to discriminate in living specimens, especially before the ripening of the capsules, and still more so in the case of herbarium specimens; and were the mode of imbrication of the petals, if such variation is to be depended upon, to be insisted on as a primary character, it would of necessity impair, if not stultify, the value of the result obtained from an attempted examination of the greater part of the material afforded by collectors and distributors. I propose, therefore, by slightly modifying Rohrbach's arrangement, to base the primary subdivisions of the genus on the structure of the calyx; and to exclude from his subgenus *Behen* those few species in which the two characters of a calyx with anastomosing veins and inflated at the time of flowering are not associated, viz., *S. pygmæa*, *S. turgida*, and *S. Douglasii*. I propose also to follow Engler & Prantl* in considering each division of *Silene* proper as a subgenus, thus making three subgenera instead of two. I would further suggest *Gastrosilene* as a substitute for *Behen*, which is somewhat of a misnomer. *Cucubalus Behen* L. and *Behen vulgaris* Mönch, are certainly superseded names for *Silene inflata*, the best known species of the subgenus, but *Silene Behen* L. is a good species, and belongs to another subgenus, so that the name as taken up by Rohrbach is misleading. *Gastrosilene* is pseudhomonymic also with *Gastrolychnis*, one of the sections of the genus *Lychnis* proposed by Fenzl.

The limits of the genus will be more conveniently circumscribed if Rohrbach's generic character of a unilocular capsule septate at the

* *Die Nätürlichen Pflanzenfamilien*, Theil iii. (1889), p. 70.

base is maintained; so that many of the North American species described by Sereno Watson and most of the species from the province of Yun-nan described by M. Franchet,* in which the ovary and capsule are strictly unilocular, should be transferred to the genus *Melandryum*. It would be better also to exclude four species, retained by Rohrbach in his monograph, in which the ovary has 5 styles, and is of course 5-septate at the base, viz., *Polyschemone nivalis* Schott, *Eudianthe Cœli-rosa* Fenzl, *E. corsica* Fenzl, and *E. læta* Fenzl.

The definitions of the proposed subgenera of *Silene* are here subjoined:—

Subgenus I. Gastrosilene. — Calyx 10-vel 20-nervius, nervis reticulato-venosis, vesicarie inflatus et post anthesin semper ampliatus, fructifer a capsulâ remotus. Species perennes.

Subgenus II. Conosilene.—Calyx 20–30-vel 60-nervius, nervis haud anastomosantibus, fructifer e basi ampliatâ ad apicem versus attenuatus. Herbæ annuæ.

Subgenus III. Eusilene.—Calyx semper 10-nervius, vel evenius vel nervis anastomosantibus, nunquam vesicarie inflatus, fructifer autem supra carpophorum sæpe a capsulâ maturescente distentus. Inflorescentia valde varians. Species annuæ, biennes, vel perennes.

FIRST RECORDS OF BRITISH FLOWERING PLANTS.

COMPILED BY

William A. Clarke, F.L.S.

(Continued from vol. xxxi., p. 308.)

Anagallis arvensis L. Sp. Pl. 148 (1753). **1538.** "Anagallis . . . . anglice Pympernell."—Turn. Lib. "It groweth commonly amonge the corne. The male hath a crimsin floure & the female hath a blewe floure."—Turn. Names, A viij (1548).

A. cærulea Schreb. Spic. Fl. Lips. 5 (1771). **1548.** Turn. Names (see last species). "I found the female with blewe flowers in a chalkie corne fielde in the way from Master William Swaines house of Southfleete [Kent] to Long fielde downes."—Ger. 494 (1597).

A. tenella L. Mant. ii. 335 (1771). **1633.** "I first found it Anno 1626 in the Bishopricke of Durham, and in two or three places of Yorkshire . . . also on the bogges upon the heath neare Burntwood [Brentwood] in Essex."—Johnson, Ger. em. 630.

Centunculus minimus L. Sp. Pl. 116 (1753). **1724.** "In pascuo ante vicum Chisselhurst loco subudo (in a dale just before the Common)."—Dillenius in R. Syn. iii. Addend. (facing p. 1).

Samolus Valerandi L. Sp. Pl. 171 (1753). **1629.** "Ex Saltmarsh habuimus Anagallidem aquaticum tertiam, Lob."—Johns. Kent, 9. Cf. Merc. Bot. p. 19.

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* *Bull. Soc. Bot. France*, xxxiii. (1886), pp. 417—428.

Fraxinus excelsior L. Sp. Pl. 1057 (1753). **1548.** "Asshes growe in euery countrey."—Turn. Names, D ij, back.

Ligustrum vulgare L. Sp. Pl. 7 (1753). **1562.** "Groweth very plentuously in Cambrich shyre in the hedges."—Turn. ii. 38.

Vinca minor L. Sp. Pl. 209 (1753). **1551.** "Groweth . . . wylde . . . in the west cuntre."—Turn. i. 59.

Microcala filiformis Hoffm. & Link, Fl. Portugaise, i. 359 (1809). **1670.** "Versùs extrema Cornubiæ in solo putrido & lacustri provenit."—Ray, Cat. 63.

Blackstonia perfoliata Huds. i. 146 (1762). **1570.** "Angliæ locis . . . collibus urbi Bristoiæ eminentibus."—Lob. Adv. 173.

Erythræa Centaurium Pers. Syn. i. 283 (1805). **1538.** "Centaurii duo sunt genera minus . . . angli vocant Centory."—Turn. Lib. "In great plentie throughout England, in most pastures and grassie fieldes."—Ger. 437.

E. latifolia Sm. Engl. Fl. i. 321 (1824). **1804.** "In arenosis maritimis prope Liverpool cum vulgari . . . invenerunt D. Bostock M.D. et D. Shepherd, Hort. Botanici Liverpoolensis curator indefessus."—Smith, Fl. Brit. iii. 1393.

E. linarifolia Pers. Syn. i. 283 (1805). **1805.** "Mr. Winch finds it abundantly near Newcastle, and Mr. Brodie . . . equally copiously near Brodie House in Elgin shire."—Dawson Turner in Bot. Guide, 469. There are specimens in Herb. Mus. Brit. collected on Holy Island by W. McRitchie and J. Shepherd in 1794.

E. pulchella Fries, Nov. ed. 2, 74 (1828). **1796.** "First found in England by my friend James Watt Esq. on the north coast of Cornwall, on the downs at Port Owen, near the sea."—With. Arr. ed. 3, 255.

E. capitata Willd. ex Cham. Adnot. ad Fl. Berol. (1815), var. *sphærocephala* Townsend in Journ. Linn. Soc. xviii. 403 (1881). **1879.** Freshwater Downs, Isle of Wight.—F. Townsend in Journ. Bot. 1879, 327. See also his Fl. of Hampshire, 213, and Journ. Linn. Soc. xviii. 398.

Gentiana Pneumonanthe L. Sp. Pl. 228 (1753). **1633.** "On a wet moorish ground in Lincolnshire, 2 or 3 miles on this side Caster [Caistor], and as I remember, the place is called Netleton Moore."—Johnson, Ger. em. 438.

G. verna L. Sp. Pl. 228 (1753). **1650.** "In the Mountaines betwixt Gort and Galloway [Galway], abundantly. Mr. Heaton."—How, Phyt. 46. "Gathered in April 1797 in Teesdale Forest Durham by Mr. John Binks and sent us by the Rev. Mr. Harriman, the first botanist who has ascertained it in England."—E. B. 493 (1798).

G. nivalis L. Sp. Pl. 229 (1753). **1794.** Ben Lawers.—James Dickson in Linn. Trans. ii. 290.

G. Amarella L. Sp. Pl. 230 (1753). **1568.** "It groweth in England both in Dorsetshyre upon the playne of Salisberrye and also in Yorkeshyre in bare places."—Turn. iii. 25.

G. germanica Willd. Sp. Pl. i. 1346. **1841.** "Some years ago Mr. W. Pamplin observed a Gentian with large flowers in the neighbourhood of Tring, in Hertfordshire." The Rev. W. H. Cole-

man subsequently identified this as *G. germanica*.—Gard. Chronicle, i. 671 (1841). This was probably the plant observed near Tring in 1812 by James Dickson and William Anderson: see Fl. Hertfordiensis, 188.

G. campestris L. Sp. Pl. 231 (1753). **1597.** "Upon a chalkie bank in the highway between St. Albans and Gorham berrie," &c.—Ger. 354. See Ger. emac. 437, and Flora of Herts, 275.

Menyanthes trifoliata L. Sp. Pl. 145 (1753). **1570.** "Frequens paludosis riguisque pratis Angliæ."—Lob. Adv. 382.

Limnanthemum peltatum Gmel. ap. Act. Petrop. xiv. 527 (1769). **1570.** "Juxta amœnissima Tamesis fluenta in udis scrobibus et lacustris pratensibus."—Lob. Adv. 258.

Polemonium cæruleum L. Sp. Pl. 162 (1753). **1666.** "On the Rocks betwixt Mawwater Tarn and Mawanco where the highest Rock standeth round like a Castle."—Merrett, 123.

Cynoglossum officinale L. Sp. Pl. 134 (1753). **1548.** "It groweth in sandy groundes and aboute cities and townes."—Turn. Names, C vj, back.

C. germanicum Jacq. Obs. ii. 31 (1767). *C. montanum* Lam. Fl. Fr. ii. 277 (1778). **1597.** "Groweth very plentifully by the waies side, as you ride Colchester highway from Londonward betweene Esterford and Wittam in Essex."—Ger. 659.

Symphytum officinale L. Sp. Pl. 136 (1753). **1538.** "Symphytum herbarij vocant consolidam maiorem, vulgus Comfrey."—Turn. Lib. Mentioned as growing in England.—Turn. ii. 148 (1562).

S. tuberosum L. Sp. Pl. 136 (1753). **1777.** "Mr. Yalden found it growing sparingly opposite the new well at the Water of Leith," &c. (Scotland).—Lightf. 1092.

Lycopsis arvensis L. Sp. Pl. 139 (1753). **1633.** "Upon the drie ditch bankes about Pickadilla."—Ger. em. 799.

Pulmonaria angustifolia L. Sp. Pl. 135 (1753). **1629.** "In England . . . . found out by John Goodier, a great searcher and lover of plants, dwelling at Maple-durham in Hampshire."—Park. Parad. 248. "Mr. Goodyer found [it] May 25, Anno 1620, flouring in a wood by Holbury house in the New Forrest in Hampshire."—Ger. em. 809.

Mertensia maritima Gray, Nat. Arr. 354 (1821). **1640.** "Groweth in one of the Iles about Lankashire, there found by Mr. Thomas Hesket."—Park. Theatr. 767.

Myosotis cæspitosa K. F. Schultz, Fl. Starg. Suppl. ii. (1819). **1816.** "On Waterdown Forest and near the great Rocks, Tunbridge, Kent."—T. F. Forster in Fl. Tonb. p. 25 (as a var. of *M. palustris*).

M. palustris Relh. Fl. Cant. 76 (1785). **1597.** "In almost every shallowe gravely running streame."—Ger. 266.

M. repens D. Don ap. Hook. Fl. Scot. 67 (1821). **1821.** "Moist hills about Glasgow, D. Don; and Ochil hills, G. & D. Don."—Hook. *l. c.*

M. alpestris Schmidt, Fl. Boëm. 26 (1795). **1813.** Found

"long ago" by Mr. G. Don, Mr. J. Mackay, and others on highland mountains in Scotland (E. B. 2559, *M. rupicola*), but first published in Don's Herb. Brit. 205 (1804, as *M. alpina*).

M. sylvatica Hoffm. Deutschl. Fl. ed. 1, 61 (1791). **1666.** "In Charlton and many other woods in Kent."—Merrett, 82.

M. arvensis Willd. Prod. Fl. Berol. 77 (1787). **1597.** "Upon most drie gravely and barren ditch bankes."—Ger. 267. "In the backe close of Sir John Tunstall his house a little beyond Croydon."—Park. Theatr. 692 (1640).

M. collina Hoffm. Deutschl. Fl. 61 (1791). **1830.** First clearly distinguished from *M. arvensis* by Borrer in E. B. S. 2629; but the *M. arvensis* figured E. B. 2558 (1813) is this species.

M. versicolor Sm. E. B. 2558 (1813). **1670.** In Cambs. —Ray. "M. scorpioides minor flosculis luteis."—Ray, Cat. 218.

Lithospermum purpureo-cæruleum L. Sp. Pl. 132 (1753). **1670.** "On the top of a bushy hill near Denbigh-town . . . . also in Somerset-shire, not far from Taunton."—Ray, Cat. 197.

L. officinale L. Sp. Pl. 132 (1753). **1548.** "Groweth plentuously aboute woddes and busshes."—Turn. Names, E j, back.

L. arvense L. Sp. Pl. 132 (1753). **1562.** "In England growyng among the corne."—Turner (Herb. ii. 41). Johns. Kent, p. 2 ("Anchusa degener facie milii solis").

Echium vulgare L. Sp. Pl. 139 (1753). **1551.** "Groweth in sandye places . . . . called in some places of Englande Cattes tayles, in other places wilde Buglosse."—Turn. i. fol. 16.

Calystegia sepium R. Br. Prod. Nov. Holl. 483 (1810). **1548.** "Convolvulus . . . in english wythwynde or byndeweede . . . wyndeth it selfe about herbes and busshes."—Turn. Names, C iiij, back.

C. Soldanella R. Br. Prod. Nov. Holl. 483 (1810). **1551.** "I have not sene it in England savyng only besyde Porbeck [Dorsetshire]. Howbeit, I thynke verely, that it is in other places, in great plenty."—Turn. i. fol. 37.

Convolvulus arvensis L. Sp. Pl. 153 (1753). **1538.** "Convolvulus . . . . The comon bynde aut The lytell wynde."—Turn. Lib. "In most parts of England."—Ger. 714 (1597).

Cuscuta europæa L. Sp. Pl. 124 (1753). **1797.** "Mr. Sowerby last autumn received wild specimens of the real *europæa* from Mr. Alexander Smith of Aberdeen, and others from the Rev. Mr. Hemsted, which have at the same time verified the plant as a native of Britain."—E. B. 378. But it is probably included in the passage cited from Turner under the next species.

C. Epithymum Murr. Syst. Veg. ed. 14, 140. **1548.** "Doder groweth aboute Flax, Tares, Nettels, Tyme, Savery, Hoppes, and many other such lyke, it is much more plentuous in Germany then it is in Englande."—Turn. Names, B viij, back.

C. Trifolii Bab. in Phytol. i. 467 (1843). **1843.** First noticed in 1842 by Mr. G. S. Gibson near Thaxted, Essex.—Phytol. *l. c.*

Solanum Dulcamara L. Sp. Pl. 185 (1753). **1568.** "Groweth about ditches and watery places, and hedges."—Turn. iii. 2.

S. nigrum L. Sp. Pl. 186 (1753). **1597.** "Commeth up in

many places and not onely in gardens, . . . but also neere common high waies, the borders of fieldes, by olde wals and ruinous places." Ger. 268.

Atropa Belladonna L. Sp. Pl. 181 (1753). **1570.** "In Anglia ubique obvio proventu fruticat."—Lob. Adv. 103. "It groweth very plentifully in Hollande, in Lincolnshire, and in the Ile of Elie at a place called Walsoken neere unto Wisbitch. I founde it groweing without the gate of Highgate."—Ger. 269 (1597).

Hyoscyamus niger L. Sp. Pl. 179 (1753). **1551.** "Henbayne . . . groweth aboute the sea syde, and about guttures and ditches, about townes and cytyes."—Turn. Herb. i. 10 (back), (31).

Verbascum Thapsus L. Sp. Pl. 177 (1753). **1538.** "Verbascum . . . . a vulgo Mullen aut Longwort appellatur."—Turn. Lib. "Upon the end of blacke Heath next to London, as also about the Queens house at Eltham, neere unto Dartford in Kent." —Ger. 630 (1597). See also Turn. ii. 161.

V. pulverulentum Vill. Fl. Dauph. ii. 490 (1786). **1670.** "Circa mænia Norvici urbis."—Ray, Cat. 312.

V. Lychnitis L. Sp. Pl. 177 (1753). **1597.** "Verbascum album . . . . these plantes do growe where the other Mulleins do, and in the like soile."—Ger. 632. See localities quoted under *V. Thapsus*.

V. nigrum L. Sp. Pl. 178 (1753). **1570.** "In Anglia . . . sponte provenit."—Lob. Adv. 242.

V. virgatum Stokes in With. Bot. Arr. ed. 2, 228 (1787). **1787.** "First shewn me by my late worthy friend Mr. Waldron Hill, of Worcester . . . near that town."—Stokes, *l. c.*

Linaria Cymbalaria Mill. Dict. ed. 8, n. 17 (1768). **1640.** "It groweth naturally in divers places of our Land, although formerly it hath not beene knowne to be but in gardens as about Hatfield in Hartfordshire both in their gardens and other places." —Park. Theatr. 681.

L. Elatina Mill. Dict. ed. 8 (1768), and **L. spuria** Mill. *l. c.* **1570.** "Rarius in Anglia comparet."—Lob. Adv. 197. "Both these plants I have founde in sundrie places where corne hath growen, especially Barley, as in the fieldes about Southfleete in Kent, where within sixe miles compasse there is not a fielde wherein it doth not grow."—Ger. 501 (1597).

L. repens Mill. Dict. ed. 8 (1768). **1670.** "In Cornubia non longe ab oppido Perin [Penryn] versus occidentem in sepibus." —Ray, Cat. 195.

L. vulgaris Mill. Dict. ed. 8, n. 1 (1768). **1548.** "Groweth plentuously in Englande."—Turn. Names, E viii.

L. viscida Moench. Meth. 524 (1794). **1633.** "Wilde among corne in divers places."—Ger. em. 550.

Antirrhinum Orontium L. Sp. Pl. 617 (1753). **1551.** "Groweth much in England in the corne feldes and in fallowed landes."—Turn. i. 49.

Scrophularia aquatica L. Sp. Pl. 620 (1753). **1551.** "The common water betony groweth commonly about water sydes."— Turn. i. 153.

S. umbrosa Dumort. Prod. 37 (1827). *S. Ehrharti* C. A. Stevens in Ann. N. H. v. 1 (1840). **1840.** "Edinburgh, Mr. W. H. Campbell. Cramond Woods, West Lothian, Dr. A. Hunter." —C. A. Stevens in Annals, *l. c.*

S. nodosa L. Sp. Pl. 619 (1753). **1597.** "In greatest abundance in a woode as you go from London to Harnesey, and also in Stowe woode, and Shotouer neere Oxenforde."—Ger. 580.

S. Scorodonia L. Sp. Pl. 620 (1753). **1724.** Found "by Mr. Edward Lhwyd near the Sea-shore about St. Ives in Cornwal." —Ray, Syn. iii. 283.

Limosella aquatica L. Sp. Pl. 631 (1753). **1663.** In Cambs "secus vias ubi per hyemem aquæ stagnârunt."—R. C. C. App. i. 8. "On Hunslow-heath . . . . in the Way to Coln Brook."—Merrett, 95 (1666).

Sibthorpia europæa L. Sp. Pl. 631 (1753). **1677.** "In Cornubia & Devonia frequens."—Ray, Cat. ed. 2, 18. First observed by Ray "near St. Ives," 1st July, 1662.—Iter. iii.

Digitalis purpurea L. Sp. Pl. 621 (1753). **1568.** "Much in Englande & specially in Norfolke."—Turn. iii. 16.

Veronica hederæfolia L. Sp. Pl. 13 (1753). **1597.** "In gardens among pot herbes," &c. ("Alsine hederacea").—Ger. 493.

V. didyma Ten. Fl. Neap. Prod. i. 11 (1811). *V. polita* Fr. Nov. ed. 1, 13 (1814). **1829.** Distinguished from *V. agrestis* by Borrer in E. B. Suppl. 2603. Figured E. B. 783, and in Curtis' Fl. Lond. as *agrestis*.

V. agrestis L. Sp. Pl. 13 (1753). **1597.** "Being gotten into a garden ground, it is hard to be destroied, but naturally commeth up from yeere to yeere as a noisome weede" ("Alsine foliis Trissaginis").—Ger. 491.

V. Tournefortii C. C. Gmel. Fl. Bad. i. 39 (1806). *V. persica* Poir. (1808). *V. Buxbaumii* Ten. (1811). **1829.** "In the shrubbery in front of the house at Whiterig, Berwickshire. Borrer . . . found it several years ago near Henley [Henfield], in Sussex." —G. Johnston, Flora of Berwick-upon-Tweed, p. 225.

V. triphyllos L. Sp. Pl. 14 (1753). **1670.** "Sent by Tho. Willisell and found by him at Rowton in Norfolk . . . . and at Mervell in Suffolk."—Ray, Cat. 340.

V. verna L. Sp. Pl. 14 (1753). **1775.** "Found by Sir John Cullum near Bury in Suffolk."—Rose's Elements of Botany, 445.

V. arvensis L. Sp. Pl. 13 (1753). **1629.** "Alsine foliis veronicæ."—Johns. Kent, p. 5.

V. serpyllifolia L. Sp. Pl. 12 (1753). **1548.** "Betonica Pauli . . . groweth . . . in Englande in a parke besyde London." —Turn. Names, B v, back.

V. alpina L. Sp. Pl. 11 (1753). **1790.** Found by James Dickson "in montibus propè Garway Moor, et in Ben Nevis," in 1789.—Dicks. Fasc. ii. 29. Trans. Linn. Soc. ii. 287.

V. fruticans Jacq. Enum. Vindob. 2, 200 (1762). *V. saxatilis* Scop. Fl. Carn. ed. 2, i. 11 (1772). **1790.** Found by James Dickson on Ben Lawers in 1789.—Dicks. Fasc. ii. 29. Trans. Linn. Soc. ii. 288.

(To be continued.)

ASA GRAY'S LAST WORDS ON NOMENCLATURE.

[In this Journal for 1892, pp. 254, 318, reference was made to a letter,—the last written by Asa Gray,—which, owing to circumstances not very clearly related, had never been published. The volume of the *Letters of Asa Gray*, just issued by Messrs. Macmillan, contains the document in full, and we here reproduce it.

The circumstances connected with its writing and subsequent non-publication require to be stated. That Asa Gray was willing it should be published, the letter itself makes clear; that he considered it important is plain from the passage in the *Letters* which introduces it:—"On Sunday [Nov. 27] his pulse and temperature had improved so much that he was allowed to get up and go downstairs at noon, the doctor congratulating him on the success of the treatment. There seemed a weakness of the right hand, which, however, passed away, and he wrote that evening the letter to Dr. Britton, which follows, and when remonstrated with for making the exertion, said, 'it was important, and must be written.'" He died on the 2nd of the following February.

Mankind has always attached a special interest to the last utterances of great men, and it might have been supposed that Dr. Britton would have hastened to avail himself of the permission, expressly given by the writer to publish, in his *Bulletin*, the last contribution ever made by Asa Gray to the literature which he had enriched for so many years. So far, however, was this from being the case, that it was not until Gray's fellow-worker himself lay on his death-bed that any knowledge of its existence was made public. Sereno Watson, in his last illness, dictated for the *Botanical Gazette* some remarks "On Nomenclature," which appeared in that journal for June, 1892, and which contain the following passage:—"I must express surprise that Dr. Britton has not considered it his duty to publish the last written words of Dr. Gray which were addressed to him upon this subject, and which expressed his positive opinions upon this point." We called attention to this in our Journal (1892, 254) in these words:—"When, in the exercise of our editorial discretion, we withheld from publication a subsequently printed note by Dr. Britton on this subject, he did not scruple to say [and to publish] that this was because we were 'apparently afraid of the argument therein contained.' We shall await with interest Dr. Britton's statement of the reasons which have induced him to suppress the last utterances of America's greatest systematist."

Dr. Britton's explanation appears in the *Botanical Gazette* for August, 1892, p. 254. He speaks of the letter as "personal," and, having admitted the accuracy of Dr. Gray's correction as to nomenclature, proceeds:—"The letter did not come to me as editor of the *Bulletin* of the Torrey Botanical Club, for I was not then editing that journal. I did not realize that it was intended for publication, and do not think that it was." Moreover, having sent the letter to Cambridge, in accordance with a request, and having accepted a

copy in exchange, he "certainly never had any right to publish it after it had passed from [his] possession."

Commenting on the above, we said (*Journ. Bot.* 1892, 318) :— "These reasons may or may not be considered satisfactory, but we think that all botanists will regret that Dr. Gray's last utterances on a subject in which he is known to have taken a special interest were not made public." These utterances are now before botanists, who must form their own conclusions as to the motives which have hitherto prevented their publication.—Ed. Journ. Bot.]

"Sunday Evening, November 27, 1887.

"Dear Dr. Britton,

"I wish to call your attention either in a personal way or in the *Bulletin*, if preferred, to a name coined by you on the 223rd page of this year's *Bulletin*.

"'*Conioselinum bipinnatum* (Walter, Fl. Car., under *Apium*), Britton, *Selinum Canadense*, Michx., 1803.'

"I want to liberate my mind by insisting that the process adopted violates the rules of nomenclature by giving a superfluous name to a plant, and also that in all reasonable probability your name is an incorrect one.

"Take the second point first. On glancing at the *Flora of North America*, of Torrey and Gray, i. 619, where the name *Conioselinum Canadense* legitimately came in, you will notice that the name *Apium bipinnatum*, Walt., is not cited as a synonym; also that the synonymous name of *Cnidium Canadense*, Spreng., is cited with 'excl. Syn.' This *Apium bipinnatum*, Walt., you might gather was one referred to. Sufficient reason for the exclusion by Dr. Torrey might have been that Michaux's plant is a cold northern one, which nobody would expect in or near Walter's ground—the low and low middle part of Carolina. Besides, the preface of that *Flora* states that Walter's herbarium had meanwhile been inspected by Dr. Torrey's colleague, who may now add that the *Apium bipinnatum* is not there. So that the name you adopt rests wholly upon a mere guess of Sprengel's, copied by DeCandolle, dropped on good grounds by Torrey, but inadvertently reproduced in Watson's *Index*, copying DeCandolle. I suppose you would not contend that a wholly unauthenticated and dubious (I might say, doubtless mistaken) name, under a wrong genus, should supersede by its specific half a well-authenticated and legitimate name. And I am sure that you will not take it amiss when I say that very long experience has made it clear to me that this business of determining rightful names is not so simple and mechanical as to younger botanists it seems to be, but is very full of pitfalls. I trust it is no personal feeling which suggests the advice that it is better to leave such rectifications for monographs and comprehensive works, or at least to make quite sure of the ground.

"We look to you and to such as yourself, placed at well-furnished botanical centres, to do your share of conscientious work and to support right doctrines. So I may proceed to say that, upon the recognized principles since the adoption of the Candollian

code, your name of *Conioselinum bipinnatum*, even if founded in fact, would be inadmissible and superfluous. By a corollary of the rule that priority of publication fixes the name, taken along with the fact [that] a plant-name is of two parts, generic and specific, it follows that in any case, *Conioselinum Canadense* is the prior name for those who hold to the genus *Conioselinum*. I have laid down what I take to be the correct view as to this, in my *Structural Botany*, paragraph 794, where it is supported by the high authority of Bentham. I believe it is more and more acceded to by the most competent judges. There are those who make transpositions of divorced halves of plants name [plant names], and who also make the law of priority mechanically override other equally valid laws, without regard to sense. To such the old law maxim of the elder DeCandolle was applied; *summum jus, summa injuria.* If you like to adopt their ideas, you have at hand a still older, the very oldest, name, namely, *Conioselinum Chinense*, for I can certify that the plant we are concerned with is *Athamantha Chinensis* of Linnæus.

"Very truly yours,

"ASA GRAY."

SHORT NOTES.

ORCHIS STRATEUMATICA L.—In the *Flora of British India* (vi. 103) Sir Joseph Hooker has the following note on this plant:—"*Neottia strateumatica* Br. *Prodr.* 319 (in note). In a note under *Neottia australis* Brown refers the *Orchis strateumatica* of Linnæus (*Flor. Zeylan.* n. 319; *Sp. Plant.* i. 943) to *Spiranthes*, on the faith of a specimen in Hermann's Herbarium; but Linnæus' character of 'spur slender, as long as the ovary,' is quite opposed to this determination. I do not know what it is." Sir Joseph has overlooked Dr. Trimen's identification of Hermann's plant with *Zeuxine sulcata* Lindl. (*Journ. Linn. Soc.* xxiv. 149), and apparently does not realise that the "specimen in Hermann's herbarium" is the type of Linnæus's plant. The history of this valuable collection is given by Dr. Trimen (*l. c.* 129–132); but it may be well to call attention to its ready accessibility in the Botanical Department of the British Museum, where so much important material for the determination of the plants of the older writers is stored. The advocates of the adoption of the oldest specific name will doubtless insist that this commonest of Indian orchids shall be known in future as *Zeuxine strateumatica*. I may say that there can be no doubt as to the accuracy of Dr. Trimen's determination, as Hermann's specimen is amply sufficient, and Linnæus has himself written under it, "Orchis caule ad summum folioso. Burm. Zeyl."—the first name which he quotes in establishing his *Orchis strateumatica*.—JAMES BRITTEN.

ERUCASTRUM POLLICHII IN CAMBRIDGESHIRE (*Journ. Bot.* 1892, 308).—From a letter and specimen preserved in the University Herbarium, I find that this plant was obtained in 1885 by the late Wm. Marshall, of Ely, from Newmarket Heath, "by the Devil's

Ditch." This evidently is the same spot where it now grows; and consequently the plant has some claim to be regarded as more than a mere casual.—J. Henry Burkill.

Fumaria pallidiflora in Surrey. — At the end of June, 1892, I gathered what seemed to be the above under a hedge bordering on the London and South-western Railway, between Witley and Milford. The name has been since endorsed by Mr. Arthur Bennett, and by Mr. Beeby, who informs me that it is an addition to the county Flora.—Edward S. Marshall.

Artemisia Stelleriana Bess. naturalised in Co. Dublin.—In September last a specimen of this handsome *Artemisia*, a native of Kamtschatka, was sent me by Mr. C. B. Moffat, as a claimant for admission to the flora of the Co. Dublin on the footing of a naturalised species. The plant had been found growing by Mr. Moffat, in scattered patches for a distance of about 300 yards, on the North Bull, a sandbank which runs along the northern shore of Dublin Bay for some two miles, and is separated from the mainland by a muddy creek a quarter of a mile in width. Here the plant grows vigorously among low sand-hills, and in association with *Psamma arenaria*, at a point remote from any house or garden. It has maintained itself in this station for at least two seasons, as I am informed by Miss A. G. Kinahan, who has introduced it into her garden at Fairview from cuttings taken on the North Bull last year, at a point which extends the range of the species, as noted here by Mr. Moffat, to fully 600 yards. Mr. F. W. Burbidge and other botanists agree in identifying my not quite mature specimen as *Artemisia Stelleriana*. I have not been able to discover how the plant reached its station on the North Bull.—Nathaniel Colgan.

New Lincoln Records.—The following are additional localities for Lincoln (S.):—

Herniaria glabra L. In company with Mr. and Miss Stow, I gathered this plant at Ancaster, 21st July, 1892. Ancaster parish joins Wilsford. It is queried for S. Lincoln in *Top. Bot.*

Rubus oigocladus Muell. & Lefv.?; Rogers, *Rubi*, p. 45. The Revs. W. Moyle Rogers and E. F. Linton thus named a plant which I gathered in September last at North Scarle, Lincoln, S.

R. gratus Focke. Abundant from North Scarle to Swinderby, Lincoln, S., *teste* Dr. Focke and Rev. W. Moyle Rogers.

Rosa agrestis Savi (*R. sepium* Thuill.). A form differing greatly from type. Fossway, nine miles S. of Lincoln.

The following is a confirmation for S. Lincoln:—

Linum perenne. There are specimens of this plant in the Nottingham Museum, gathered at Somerby, near Grantham, June 10th, 1884, by Sara P. Escritt. I have seen it in the same place since the above date, and also between Ancaster and Grantham, but very sparingly, in June, 1886. Both these stations are on the oolite. Mr. F. A. Lees gives two old records in his *Outline Flora*. *Top. Bot.* omits Lincoln.—H. Fisher.

WILTS PLANTS. — At Wraxall, near Bath, occur *Marrubium vulgare* L. and *Euphorbia Lathyris* L., both rare Wilts plants. For the former there was no recent record for the county.—S. F. DUNN.

YELLOW-FLOWERED VERBASCUM LYCHNITIS L. — On the coast of West Somerset, not far from Porlock, occurs in considerable quantity a mullein resembling *Verbascum Lychnitis* L., as described by English authors in all but its flowers, which are smaller and bright yellow. The species is recorded without comment from the same locality by Prof. Babington (*Bot. Gaz.* 1850, p. 251). On applying for a name for this variety at the Nat. History Museum, an investigation was made into the history of the species, which resulted in the following information. Linnæus's species included pale and yellow-flowered plants. From these *V. pulverulentum* was separated by Villars, the original name being unaltered, though limited in sense. As thus restricted, *V. Lychnitis* L. includes the usual pale-flowered form of Britain, and a yellow and smaller-flowered plant hitherto only noticed on the Continent. The variety "*album*" instituted by Miller and copied by Moench, though not mentioned by English writers, apparently applies to our pale-flowered plant, while "*V. Lychnitis* L. proper" includes only yellow-flowered plants. The latter, as Mr. Arthur Bennett kindly pointed out, is considered by Grenier and Godron (*Flore de la France*) as synonymous with *V. micranthum* Moretti, *Pl. Ital.* dec. 3, p. 6, and distinguished by "corolle petite, plane, tantôt jaune." The usual English plant called "*V. Lychnitis* L." by our countrymen is therefore, strictly speaking, var. *album* Mill., while the Porlock plant is the var. *micranthum* Moretti, or merely "restricted *V. Lychnitis* L." of many continental writers.—S. F. DUNN.

POTAMOGETON TRICHOIDES Cham. IN DEVON. — Among other aquatic plants collected during last autumn from Bradmere Pool, a small deep lake near Chagford, S. Devon, was a *Potamogeton* which looked like a very slender *P. pusillum*, but with peduncles many times longer than the spikes. Mr. Arthur Bennett, to whom I sent a specimen, named it *P. trichoides* Cham., with the following comment:—"It is *P. trichoides* Chamisso, the var. called *Trimmeri* by Dr. Caspary, of Königsberg, in *Journ. Linn. Soc.* viii. 273 (1860), found by Rev. K. Trimmer in Norfolk. Your plant differs from the original drawing of Chamisso's plant; his description says, 'leaves one-nerved'; yours has three nerves, and the fruit is without the undulated frontal margin that yours has. But Gay, and also Cosson and Germain (*Flore de Paris*), figure it with three nerves, and the fruit varies a good deal. A very extreme form is named var. *tuberculatus* Reichenbach. In Britain *P. trichoides* occurs in Norfolk! Suffolk! only so far as I know." Mr. Bennett adds that the plant occurs in good quantity in a fossil state in the Suffolk and Norfolk clay-beds, and also, he believes, in the Bovey Tracey beds, which occur not many miles from its modern Devon locality.—S. F. DUNN.

BETULA INTERMEDIA Thomas IN W. SUTHERLAND. — In 1886, Mr. F. J. Hanbury and myself found in Glen Callater, not far from the

entrance to Corrie Kandor, a curious *Betula*, which was variously referred to *B. intermedia*, *B. subalpina*, and *B. alpestris*. The point was eventually settled by Mr. Arthur Bennett's comparing it with an authentic specimen of *intermedia* at Kew, with which, as well as with Reichenbach's figure, it agreed very well. In September, 1887, close to the ferry at Cashil Dhu, below Ben Hope, Sutherlandshire, I met with a small tree (about 8 or 10 ft. high), which appeared to be something out of the common. Dr. Lange, to whom a specimen was sent, replied, "*B. odorata* Bechst., var. *parvifolia* (Wimm.) Regel, ad *B. alpestrum* Fr. accedens." Later on, Prof. Babington saw this plant, and considered it to be a form of *intermedia*. I recently had occasion to turn it over again, and am now quite satisfied of its practical identity with the Glen Callater form. Both are, I suspect, hybrids of *B. nana* L. with *B. pubescens* Ehrh., which the Jura plant described by Thomas is also generally believed to be. The leaves are smaller than in *pubescens*, for the most part more bluntly toothed, and frequently suborbicular; the catkins shorter (barely ½ in. long, in the Cashil Dhu specimens) and proportionately stouter, the scales and seeds somewhat different. Mr. Hanbury informs me that *B. nana* is plentiful around Ben Hope: and it is also found in the Braemar district, so that there is no great improbability in the occurrence of such a hybrid in either neighbourhood. Regel, if I recollect aright, considered *B. alpestris* also as an offspring of the same parentage, the sexes being reversed.—Edward S. Marshall.

Rubus podophyllus P. J. Muell. — Specimens of this species from three different counties having been sent me unnamed, I give the additional distribution, which takes in some of the country lying between the known limits for Britain. Merioneth and Denbigh on the west, and S.W. Yorks on the east, were the counties for which *R. podophyllus* had already been recorded. My specimens, which agree with the Welsh type rather than with the robuster Yorkshire form, come from hedges near Romiley, Cheshire, collected by Mr. J. Whitehead; Park Bridge, S. Lancashire (sent me as *R. Sprengelii?*), collected by Mr. J. A. Wheldon,—this being a form with the sepals less glandular than usual; and Mr. Charles Bailey has found the typical plant within the borders of N. Derbyshire, in the neighbourhood of Mottram (Cheshire).—Edward F. Linton.

Cotula coronopifolia naturalized.—Mr. Daniel Robert Alcock, of Trin. Coll., Dublin, sends us a note of the occurrence of this plant at Leasowe, near Birkenhead, in 1893, where he had previously observed it in 1887. Mr. Charles Bailey records it from this locality in the *Report of the Botanical Record Club* for 1884–6, p. 138, where it is said to have been "established thereabouts for eight or ten years." It seems therefore to be maintaining its ground, and may become a permanent factor in the local flora.

NOTICES OF BOOKS.

Revisio Generum Plantarum secundum leges nomenclaturæ internationales cum enumeratione plantarum exoticarum. Pars III[1]. Mit Erläuterungen (Texte en part Français; partly English text). Von Dr. Otto Kuntze. Leipzig: Arthur Felix, &c. Pp. [clvi]–ccccxx. Verzeichniss der Autoren, 2 pp.

On the completion of his former work, which was reviewed in this Journal (1892, pp. 57–62), the author started for South America. A journey lasting fourteen months has yielded him at least as much material as his former one, and the results are to be given in a third volume. His first care, however, on returning home, has been to collect all the notices of his previous publication, and to republish them with a running commentary in this, the first portion of the third volume, which has the peculiarity of being paged as a continuation of the introduction to the first.

The plan adopted by the author is somewhat bewildering, the reviews being sometimes printed in double columns, with the notes in larger type below, and in the language, whether German, French, English, or Latin, which was used by the critic. It is manifestly convenient to have all the criticisms in a handy volume, whether for or against the author's views; and it also brings into prominence the wide differences of opinion prevalent amongst the revolutionary party as to nomenclature, thereby demonstrating the wisdom of not accepting offhand the latest novelties in that department. A few of the more impetuous spirits in North America were prompt to embrace Dr. Kuntze's principles; the idea of making a fresh start being very alluring, though it may ultimately involve as much after-difficulty as the brand-new calendar of the French Republic did in its own way. From the calamitous effects of this hasty action, the shrewdness of the majority of the American botanists has preserved them, by the virtual adoption of the sensible date of 1753, as the practical beginning of modern nomenclature. This view was put forth in the summary of Dr. Kuntze's work in these pages, nearly two years ago.

The fundamental error of many writers on nomenclature is, that it is an end in itself, instead of a means. How often must it be repeated that its place is secondary, its only function to recall with certainty any particular organism? Further, as its subjects are specially liable to vary, the limits of both species and genera in numerous cases being hard to define, and the variability of human judgment being added thereto, an absolutely unanimous consensus of opinion is impossible. The personal equation will ever be a factor in the future, as it has been in the past.

One of Dr. Kuntze's objects is to draw up a code which shall be comprehensive, and binding on all. He made a feature of this in his earlier volumes, and it now takes shape in a suggested code of "laws" drawn up in German, English, and French at the end of this part. He also urges that an international congress be summoned specially with this view, and defines the qualifications of

those who should be eligible to take part and to vote in such congress. Congresses are excellent things in their way, but Dr. Kuntze regards them too much in the light of, say, an international postal convention, forgetting that such a convention has the powers of its represented governments at its back to enforce compliance. What powers has a voluntary congress? What penal enactments can it formulate and enforce? Art. 2 of the Paris Code sets this out very clearly; it says:—

"The rules of nomenclature should neither be arbitrary nor imposed by authority. They must be founded on considerations clear and forcible enough for every one to comprehend and be disposed to adopt."

In other words, if any botanist adopts a method which does not command the support of the botanical world, he must take the consequences of his perverseness. The same Congress only "recommends" its code as a suggested model, and I do not find that it was ever contemplated to make it retrospective, far less subversive, in action.

It is most regrettable that Dr. Kuntze should have thought fit to use language towards Prof. Ascherson, M. Alphonse DeCandolle, and Prof. Saccardo, of the most reprehensible character, which must everywhere rouse feelings of indignation. It is perfectly easy to dissent from an opponent's expressions without imputing fraud; Dr. Kuntze is far too apt to assign unworthy motives, as will be shown later. Another unamiable feature here shown is the author's desire to minimise his indebtedness to Kew and the MS. Index. On his arrival in this country, Dr. Kuntze displayed no deep acquaintance with the older botanical literature; indeed, it is notorious that his views only assumed their present form during his stay in England. The note on page 191 is misleading; from it the reader would infer that all the bibliographical help obtained was derived from the British Museum at Bloomsbury, which is wide of the truth; Dr. Kuntze could have utilised that admirable library but to a small extent.

It is not surprising that an author so mentally constituted should himself sometimes err. Thus, in his eagerness to convict me of one mistake, he makes two of his own. The statement that Linnæus was "contemptuous" enough to change Siegesbeck's *Obolaria* into his *Linnæa* is utterly wrong; the genus *Linnæa* was founded by Gronovius in the first edition of the *Genera*, which came out early in 1737, whilst in October of the same year Linnæus was writing to Haller about the rumour that Siegesbeck's *Hortus Petropolitanus* was published, but was sorry to say that he had not yet seen it; Amman sent the book itself to Linnæus in January, 1738. The latest charge against Linnæus is therefore clumsy, as well as false. I purposely wrote "apparently contemptuous," owing to the possible doubt as to Siegesbeck's intentions at the time; at a later date there could be none.

Another, but comparatively trifling, correction is needed as to the part taken by me with regard to the Berlin proposals; if the matter was worth mention at all, it should have been correctly

stated; so far from being wholly opposed to the movement, "gegen alle Resolutionen," I wrote to Prof. Engler, sympathising in the protest against what I considered to be pedantic innovations, but said that I could not subscribe to the document sent out, without considerable qualification, and therefore it seemed advisable not to sign it, for fear of misleading others as to my views. This neutral attitude is now held to be antagonistic, an inference which I repudiate.

It is a matter of regret that I am obliged to introduce these personal topics, but no option is left me. Dr. Kuntze lays great stress on my having effected an entire change of front since he came upon the scene; in at least eight different places he mentions this, with evident relish. Combining these several statements, I learn to my great surprise, that though I at first started from the year 1735, it was not until after the publication of the author's portly volumes that I suddenly turned round, and began to laud the *Species Plantarum*, no doubt instigated thereto by Sir Joseph Hooker! The introduction of Sir Joseph's name is unwarrantable, and the incident is imaginary; but the following reprint of a simple paragraph will demolish this Kuntzean fable:—

"Our starting point, then, is the publication of Linnæus's first edition of the *Systema* in 1735, which he followed up by the *Genera* in 1737; for Linnean names naturally, Richter's *Codex*, with Petermann's *Index*, supply means for quickly referring to the first publication of a genus or a species. Where Linnæus ascribes the genus to an earlier author, we say, 'Tourn. ex Linn.,' &c., but do not refer directly to pre-Linnean literature. Where Linnæus's names as given in his earlier works were not followed in his *Species Plantarum*, we follow the *Species Plantarum*, e. g., *Ethusa*, *Brunella*, *Centauria*, for no specific names in the modern sense were appended to these genera by Linnæus, and we bring ourselves into harmony with later usage by citing *Aethusa Centaurea*, *Prunella*, as in the *Species Plantarum*."*

The foregoing paragraph was published in this Journal for February, 1887, p. 68, more than two months before Dr. Kuntze paid his preliminary visit to the Kew Herbarium, where his first signature in the visitors' book appears on April 6th of the same year. The first Fasciculus of the *Index Kewensis* is in the hands of the public, who can judge for themselves whether the foregoing intention has not been faithfully carried out. As Richter's *Codex* was used in preparing the MS., I was in a manner forced to quote the first edition of the *Systema*, otherwise the *Genera* would have seemed the better starting point. Dr. Kuntze chooses to forget that I was fully half-way through my task before he even saw it.

A digression may be permitted here to point out the impropriety of using imperfect genera, such as so many of Adanson's and Necker's, to oust better established genera; nearly all these generic terms had remained destitute of specific names till Dr. Kuntze

---

* An obvious slip occurs in the eighth line from the bottom of the same page; *neglectum* should read *vulgatum*.

resuscitated them. Genera unprovided with specific names are incomplete, and can only enter into competition with others when properly equipped.

On page 346 Dr. Kuntze proceeds to criticise the prospectus of the *Index Kewensis:* by this time he probably realises that it would have been wiser to wait for a fuller knowledge of the work before thus hastily passing judgment. Dr. Kuntze had formed his own idea of what the work would be, and on its proving something different he feels aggrieved. He has been lavish of advice of a character impossible to adopt; the work is not his, nor planned to suit his ideas only. Although he never saw Darwin, yet he professes to know his wishes better than Sir Joseph Hooker, the life-long and intimate friend. He regrets the retrograde step, as he terms it, of not appending the full synonymy to each retained name, alleging that the only reason can be to conceal the "true" name, from the arbitrary one selected, a statement which would be infamous were it not ridiculous, and oblivious of his having acknowledged in 1890 that the *Index* would "not now be like Steudel." He complains of the high price of the work, and forthwith grumbles because it is not doubled in bulk, in cost, and indefinitely delayed to suit his whims. (His own work is relatively more than twice as costly.) The *Index Kewensis* does not pretend to supersede all research, nor to be that impossibility, a critical and immaculate investigation of the whole field of phanerogamic literature. It is intended to fulfil a more modest part, that of guiding seekers to the place of publication, with an indication of the probable affinities of each entry.

It does not need much wit to understand why it was possible to give the sunk genera under the retained ones; in the main it stood ready to hand in Bentham and Hooker's *Genera*, but the essential reason is, that users of the *Index* may readily turn to the correlated genera to find species not yet named in the accepted genera. Especial care has been exercised not to coin new names or new combinations, in direct contrast to Steudel's method of book-reduction. A standard, critical list of genera and species, which should be free from error and acceptable to all botanists, is at once as desirable and as hopeless as a universal language, or the abolition of temperament in music.

We also find in Dr. Kuntze's pages a renewed list of suggestions as to writing names, amongst which occurs the bad one that no distinction should be made in indexes between I and J: that is, because the German printers confuse them, other nations accustomed to a better method should take a step backward. In the two other "international" languages, as Dr. Kuntze delights to call them, French and English, those two letters are perfectly distinct, an overwhelming preponderance of two to one. A final attempt to compromise matters, by fixing the date of starting at 1737, the first edition of Linnæus's *Genera*, is thrown out, the author making a bid for it by stating that less alteration will be occasioned by this date than by 1753; this seems paradoxical on the face of it, and will hardly persuade anyone. Anyhow, it ensures the disappear-

ance of "*Obolaria borealis* O. K.," and also the many hundred *Tragacantha*, names abandoned even by their parent.

B. Daydon Jackson.

The Flora of Kent. By A. D. Webster, F.R.S.E. Bromley, Kent: Strong & Sons. 8vo, pp. 34.

It was only last September that we noticed a 'Flora of Kent,' and already there is another! After long neglect on the part of British botanists, the "garden of England" is the recipient of attentions which are even less flattering. Mr. Webster's book, like Mr. Fielding's, emphasises the need for the work which Mr. Hanbury has had in hand for many years, and which Mr. Marshall will, we hope, speedily bring to a successful issue. The author must be credited with good intentions, of the kind of which a certain pavement is said to be made, but these hardly atone for the audacity of claiming for this curious little pamphlet so ambitious a title. Mr. Webster indeed says it "must not be considered as at all a complete list" of Kentish plants: why then does he adopt so misleading a name?

Judged by this book, the Flora of Kent presents many curious features. The following plants are said to be "rare":—*Stellaria graminea*, *Hypericum pulchrum*, *Apium nodiflorum*, *Scandix Pecten*, *Crepis virens*, *Lapsana communis*, *Lamium purpureum*, *Polygonum Persicaria*, and many more of the same category. On the other hand, two Panicums, *Lepturus incurvatus*, *Hordeum maritimum*, and indeed every grass, save one, are "more or less common throughout the county." The exception is *Poa alpina*, justly characterised as "a rare plant in Southern England at least," which "grows on high sandy ground above Shorncliffe." This is not the only plant which here receives a notable extension in range: of *Saxifraga hypnoides*, for instance, "several large patches occur by the roadside near Keston Church, and far removed from house or home. It may have been introduced here, but this, for various reasons, is improbable, though not impossible." Mr. Webster does not state these reasons, but he thinks *S. umbrosa* was "probably introduced," and we agree with him. *Cornus suecica* has not, we believe, been previously recorded from "near Lighthouse, Dover": it probably came south with *Poa alpina* and *Juniperus nana*, the latter recorded by Mr. Webster from "near Downes Court Farm."

The pamphlet is enriched with occasional critical notes, of which the following is a specimen:—"There is a very distinct form of the Sea Lavender, named *S. Limonium cordata*, which occurs plentifully on the chalk rocks in Eastwear Bay. . . . . It is of much smaller, and more compact growth, than the species with spatulate leaves, that are three-nerved and pointed and have the branches angular and the flower petals emarginate." There are other curious things, such as the spelling of many Latin names and some English ones, such as "Butterbeer," "Climbing Polygon," and "Loud Phleum"—the last scarcely more absurd than many

manufactured names. If the deficiencies of this work accelerate the production of a Kentish Flora worthy of the title, it will have served a useful purpose.

ARTICLES IN JOURNALS.

Bot. Centralblatt. (No. 47).—H. Heiden, 'Anatomische Charakteristik der Combretaceen.'—(No. 48). A. Hansgirg, 'Biologische Fragmenten.' — (No. 50). A. Hansgirg & H. Klebahn, *Chætosphæridium Pringsheimii*, &c. — (No. 51). J. Borodin, 'Die in St. Petersburg befindlichen Herbarien und botanischen Museum.'

Bot. Gazette (Nov. 15). — C. R. Barnes, 'The food of green plants.'—H. L. Russell, 'The bacterial flora of the Atlantic Ocean.' —P. H. Rolfs, 'Plants hurt by a late freeze.' — F. D. Bergon, 'Popular American plant-names.'

Bot. Notiser (häft. 6). — G. Andersson, '*Alnus glutinosa* och *A. incana*.' — G. Lagerheim, '*Sarcorhopalum tubæforme*.' — O. Juel, 'Bidrag till Kännedomen om Skandinaviens *Synchytrium*-arten.'— Portrait of C. G. Agardh.

Bot. Zeitung (Dec. 16).—H. Solms-Laubach, 'Ueber die in den Kalksteinen des Kulm von Glätzisch-Falkenberg in Schliesen euthaltenen Struktur bietenden Pflanzenreste.'

Bull. Bot. Soc. France (xl.: Session extraordinaire: Dec. 10). G. de Saporta, 'Sur les rapports de l'ancienne flore avec celle de la région provençale actuelle' (3 plates).—C. Flahault, 'Les zones botaniques dans le Bas-Languedoc et les pays voisins.'—H. de Vilmorin, 'Sur les formes occidentales du *Pinus Laricio*.'— —. De Seynes, 'Un *Ptychogaster* du Congo.'— —. Gomont, 'Sur quelques *Phormidium* à thalle rameux' (1 plate). — H. Coste, 'Florule du Larzac, du causse Noir et du causse de Saint-Affrique.'

Bulletin de l'Herb. Boissier (No. 11). — J. Battandier, *Saxifraga baborensis*, sp. n. (1 plate). — A. Sertorius, 'Zur Kenntniss der Anatomie der *Cornaceæ*.' — A. Rodrigue, 'Sur la structurə du tégument séminal des Polygalacées.' — G. Schweinfurth & P. Ascherson, 'Primitiæ Floræ Marmaricæ.' — A. de Jaczewski, 'Sur le *Lasiobotrys loniceræ*.'

Bull. Torrey Bot. Club (Nov.).—L. H. Bailey, 'Notes on *Carex*.' —H. H. Rusby, 'New Genera for Bolivia' (*Brittonella* (Malpighiaceæ), *Lecanosperma* (Rubiaceæ), *Addisonia* (Compositæ), *Vacciniopsis* (Vacciniaceæ): 4 plates). — G. F. Atkinson, 'Extent of annulus, and function of different parts of the sporangium of Ferns in the dispersion of spores.'—B. D. Halsted, *Exobasidium Peckii*, sp. n.

Erythea (Dec.).—E. L. Greene, 'Two rare Lobeliaceous plants' (*Baclea*, gen. nov.).—Id., 'Novitates Occidentales.'—W. L. Jepson, 'Riparian botany of the Lower Sacramento.' — P. Dietel, 'New Californian *Uredineæ*.' — W. C. Blasdale, 'Certain leaf-hair Structures.'

Journal de Botanique (Nov. 1, 16).—P. Vuillemin, 'Modifications de l'éperon chez les *Tropæolum* et les *Pelargonium*.' — F. Jadin, 'Observations sur quelques Térébinthacées.'—(Nov. 1). G. Poirault, 'Les Urédinées et leurs plantes nourricières.' — (Nov. 16, Dec. 1). L. Guignard, 'Localisation des principes actifs chez les Capparidées,' &c.— (Dec. 1). F. Hy, *Isoetes tenuissima*. — A. Lemaire, 'Un nouveau procédé de préparations microscopiques d'Algues.'

Notarisia (No. 5).—P. Paolo, 'I laghi Alpini Valtellinesi: Valle del Liro (Spluga).'

Oesterr. Bot. Zeitschrift. (Dec.). — F. Höhnel, 'Zur Kenntniss der Laubmoosflora des Küstenstriches vom Görzer Becken bis Skutari.' — J. Freyn, 'Plantæ novæ Orientales.' — K. Fritsch, *Sapromyces*, gen. nov. (*Nægelia* Reinsch, non alior.). — A. v. Degen, 'Bemerkungen über einige orientalische Pflanzenarten.'—G. Evers, 'Botanische Mittheilungen.'

BOOK-NOTES, NEWS, &c.

Mr. Alexander Stephen Wilson died in Aberdeen on Nov. 16th, in the sixty-seventh year of his age. By profession a civil engineer, and largely concerned in the construction of railways in the north of Scotland, Mr. Wilson devoted much of his leisure to botanical researches, especially of an experimental and practical kind; many of these bore upon the ergot of grasses, the hybridisation of and fertilisation of cereals, and kindred subjects. His conclusions with regard to the supposed "sclerotia" of *Phytopthora infestans* were called in question in these pages by the late Dr. Walter Flight and Mr. Murray (*Journ. Bot.* 1883, 370). Mr. Wilson was the author of various works on the lines above indicated, among them being *The Botany of Three Periods* (1878) and *A Bushel of Corn* (1883). He also wrote a number of humorous botanical verses, such as "A Mycological Serenade," "The Ballade of the Ovularian Zoophore," &c. He was a man of very varied attainments, but is said to have been "peculiarly shy and reserved."

The death of Dr. George Bennett, of Sydney, at the age of ninety, is also recorded. We hope to receive from Australia a more complete biography of this veteran naturalist than has yet appeared in this country, and we therefore reserve until then any further notice. Dr. Bennett's name appears among the contributors to the earlier volumes of this Journal.

The *Transactions of the Dumfriesshire Natural History Society* for 1892–3 contains several papers of botanical interest. Mr. G. F. Scott Elliot writes on the influence of insects on flowers; Mr. Arthur Bennett on some Scottish Orobanches; Mr. J. Fingland on Nithsdale Willows; and the Rev. George Wilson contributes a list of the plants of Glenluce, Wigtownshire. The "reader" appears to have been on his holidays while the *Transactions* was passing through the press.

The second part of the *Index Kewensis*, completing the first volume, has made its appearance. The enumeration is brought down to the end of J, and so far occupies 1268 pages. The printing of the third part is already some way advanced.

The last part of the botanical *Transactions of the Linnean Society*, issued in November, is devoted to Mr. Ridley's paper, "On the Flora of the Eastern Coast of the Malay Peninsula." Several novelties are described, the most interesting being perhaps the genus *Protamomum*, of which a plate is given: this, the author says, is allied to *Lowia longiflora* Scort., but he considers it generically distinct. The paper is an important contribution to our knowledge of the eastern side of the peninsula, which, Mr. Ridley says, "has never hitherto, so far as I am aware, been visited by any botanist": a short note on his collecting-trip to Pahang will be found in this Journal for 1892, p. 31. We are sorry to see that the author does not cite the numbers under which his novelties have been distributed, and we regret to notice the presence of a number of what are apparently *nomina nuda*, the publication of which should hardly be countenanced by so important a body as the Linnean Society.

We note the publication of the first part of a new *Flore de France* (to include the plants of Corsica and Alsace-Lorraine), by MM. G. Rouy and J. Foucaud. This instalment only carries us to the end of *Cruciferæ*, a considerable part of the volume being occupied by a very full bibliographical index. We shall doubtless have an opportunity of noticing the work when it has advanced somewhat further. At present we will content ourselves with saying that, so far as we can judge from a cursory inspection, the species are very fully and carefully treated, and the book is likely to prove an important addition to the list of European floras.

We learn that the portrait of Professor Oliver, which is to be placed in the Kew Herbarium, has been completed. The artist is Mr. Joseph Wilson Forster, whose picture of Mr. J. G. Baker was exhibited in the Royal Academy Exhibition of 1893, and is reproduced at p. 243 of our Journal for last year.

We are glad to receive the first part of *The Flora of Somerset*, by the Rev. R. P. Murray, extracted from the *Proceedings* of the Somerset Natural History Society. After a brief definition of the ten botanical districts into which he divides the county, the author proceeds at once to the Flora proper, the enumeration of which is carried down to the beginning of *Rosaceæ*. A fuller introduction will no doubt be provided later. So far as we can judge from this instalment, we are likely to have in this Flora a valuable addition to our county lists. There are evidences of care throughout, and while some of the features—*e. g.* the "first records"—which we find in our best county floras, are omitted, others—such as the prominence given to local names—are more than usually complete. We hope to notice the book at length when it has made further progress, which we trust will not be as slow as is sometimes the case with works of this kind when published piecemeal in the Proceedings of local societies.

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BY

JAMES BRITTEN, F.L.S., & G. S. BOULGER, F.L.S.

THIS INDEX, which was first published in the 'Journal of Botany,' has elicited general interest. It originated in the supposition that the want of such a reference-list, often felt by the authors, might also be shared by others; and the numerous expressions of interest and approval have fully justified the belief. Numerous additions to the information given in the Journal have been made, and some corrections. The list of names has also been considerably extended.

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HANDBOOK OF BRITISH HEPATICÆ. Containing Descriptions and Figures of the Indigenous Species of Marchantia, Jungermannia, Riccia, and Anthoceros. By M. C. COOKE, M.A., LL.D., A.L.S., Author of 'A Manual of Structural Botany,' &c.

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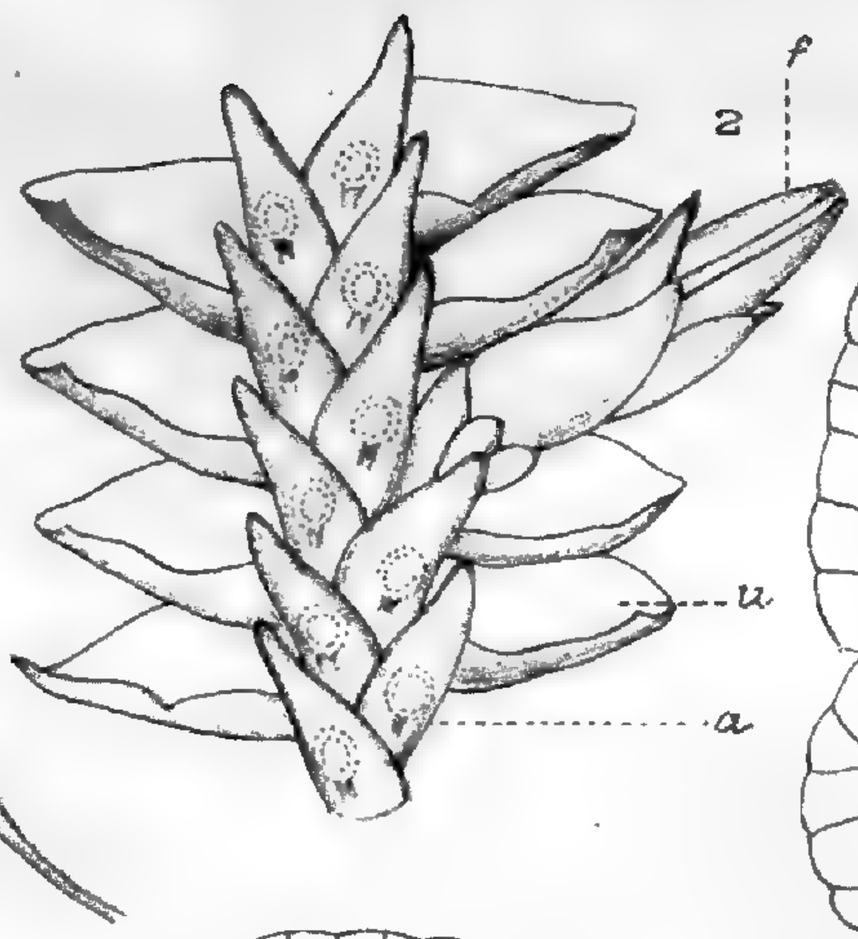

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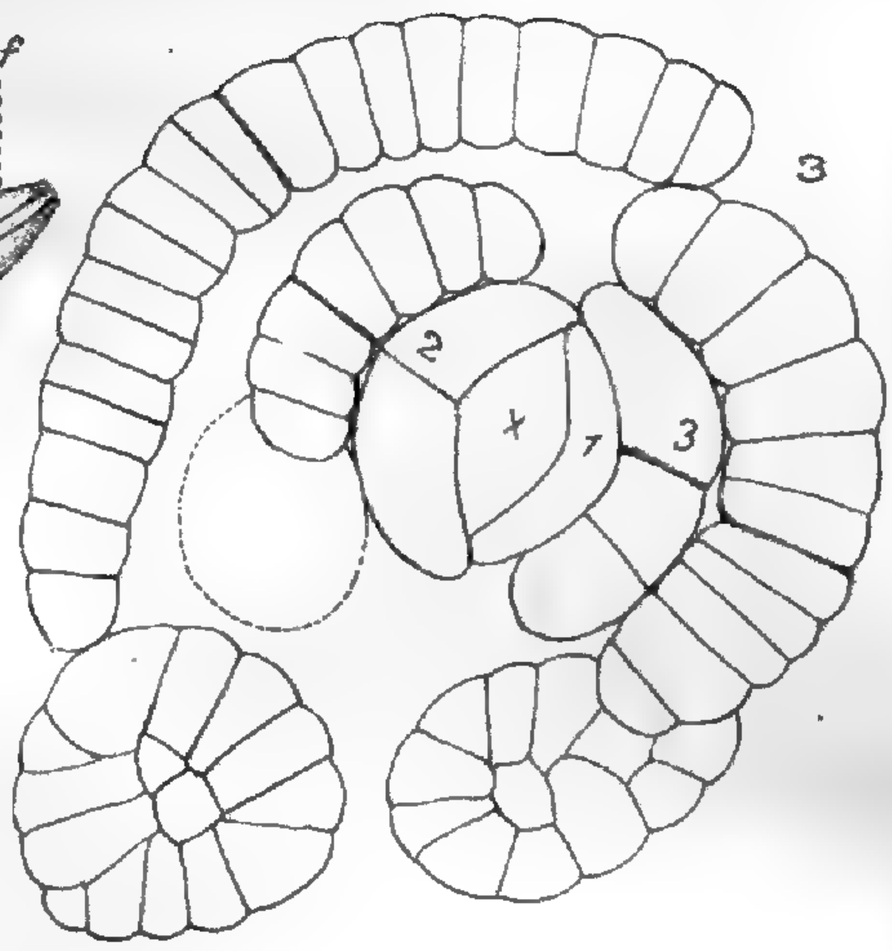

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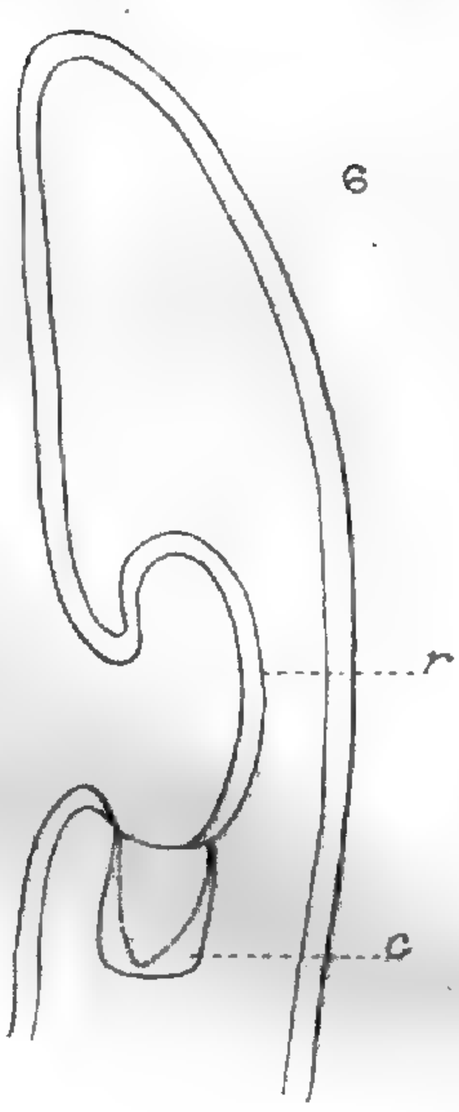

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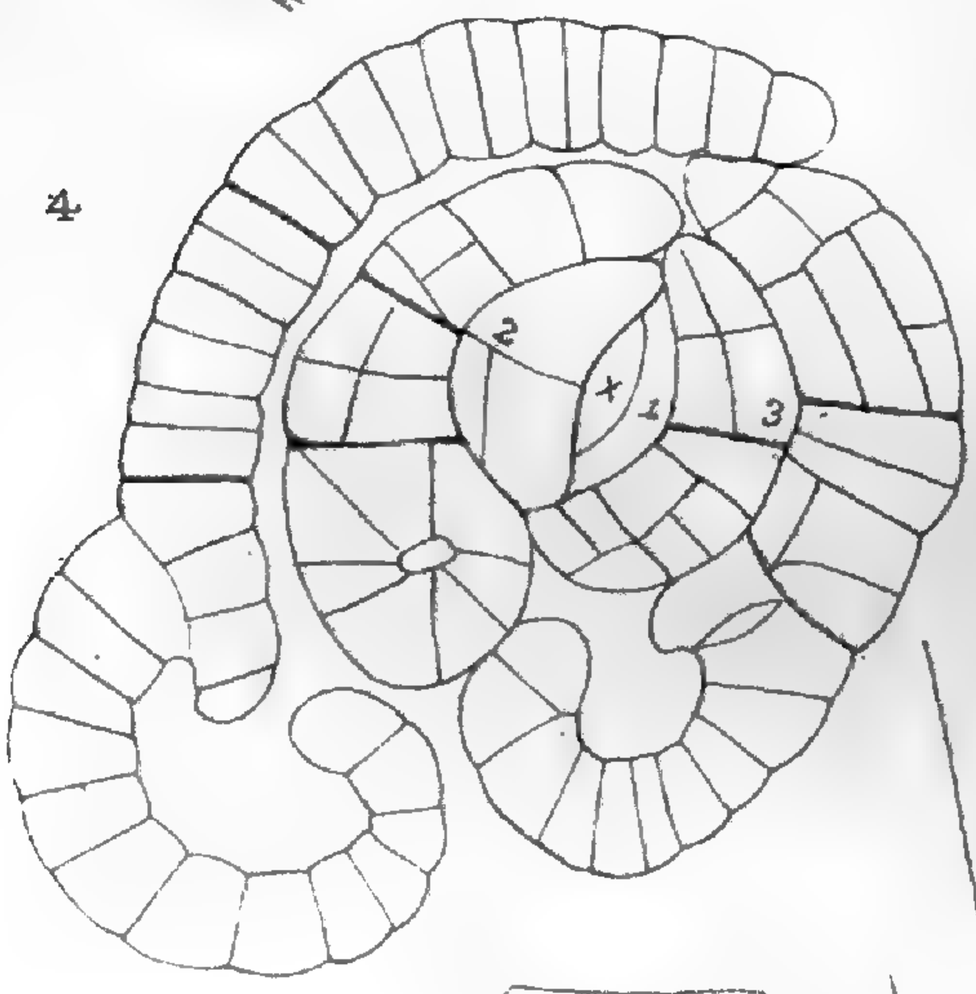

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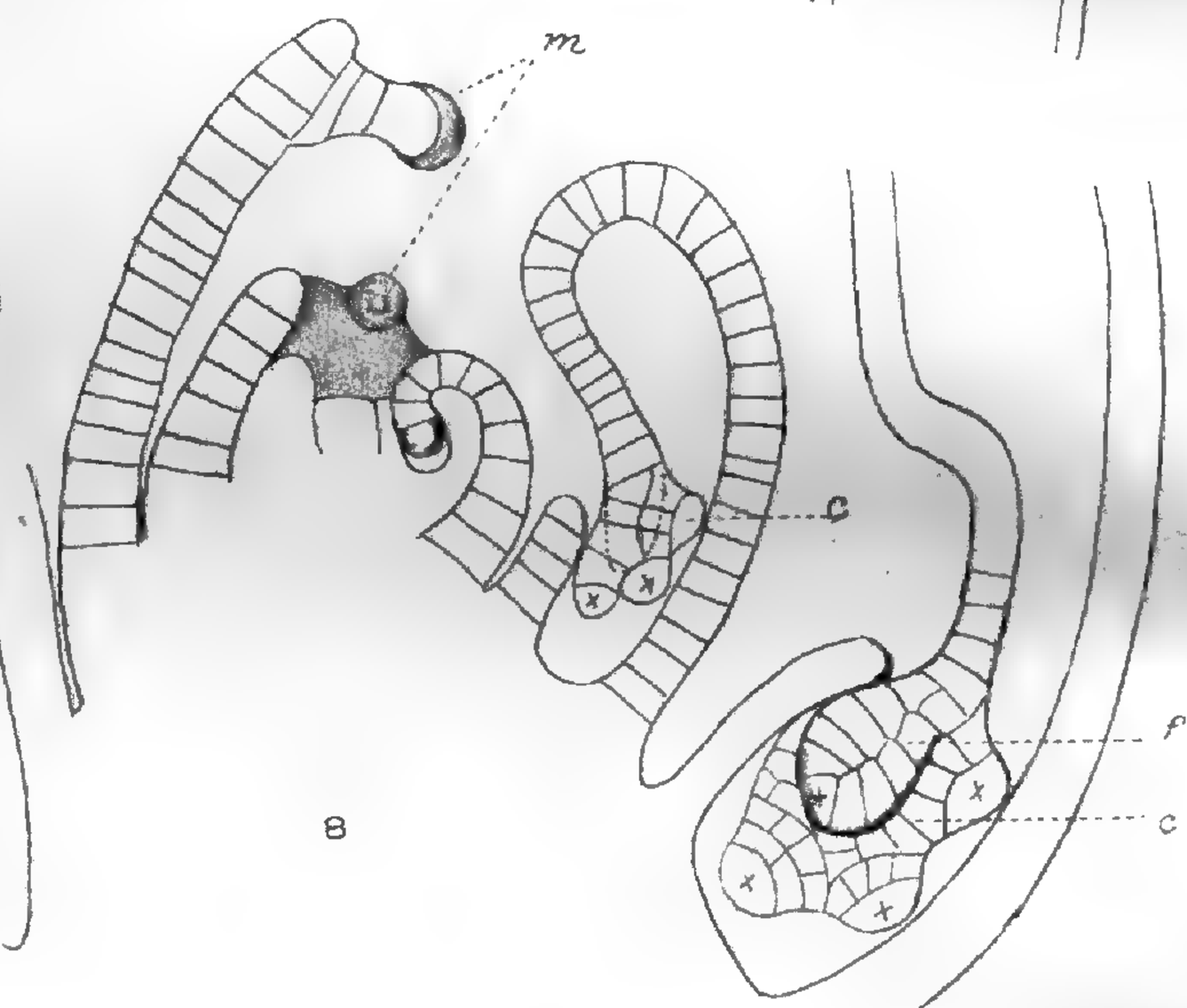

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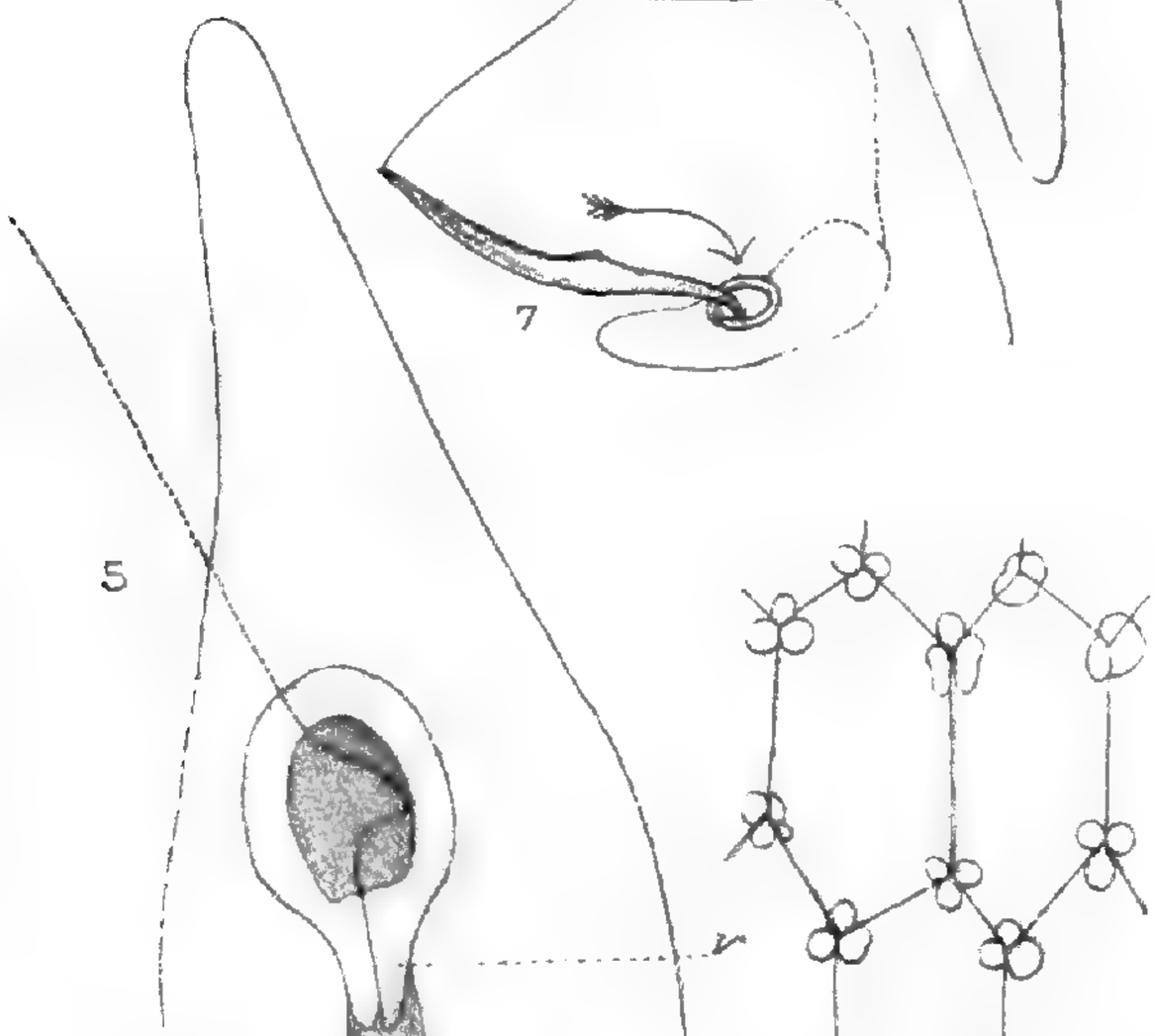

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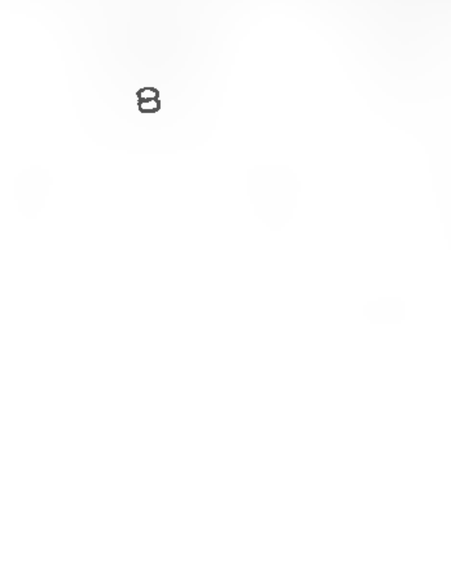

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Physiotium giganteum *Weber.*

ON THE DEVELOPMENT OF THE STEM AND LEAVES OF PHYSIOTIUM GIGANTEUM Weber.

By Jesse Reeves.

(Plate 339.)

The genus *Physiotium* includes some of the most interesting forms of liverworts, owing to the presence of auricles or water-holding sacs; these occur in a more or less complicated form in nine out of the ten species, the exception being *P.* (*Anotium*) *paradoxum* Jack, and reach a high state of complexity in *P. giganteum*. Fig. 1 represents a small shoot seen from the dorsal aspect, and fig. 2 part of another shoot seen from the ventral aspect. The shoots bend outward from the tree to which they are attached, and grow vertically upward.

An examination of the stem disclosed another remarkable feature, *viz.*, that it grows by a 2-sided apical cell, instead of the 3-sided cell hitherto supposed to be of universal occurrence in the acrogynous *Jungermannieæ*. Fig. 3 is a transverse section through the top of the apical cell, which takes the form of a 2-sided wedge with sharp edges; the side, however, is not formed by a simple curve, as is usual in this type of cell, but by two open curves which meet at the centre to form an obtuse angle. Segment (1) is still undivided; segment (2) is divided into two equal halves; while segment (3) has again undergone division in its lower (ventral) half. Fig. 4 is a section from the same apex taken a little lower than the preceding, and it is here readily seen that the *second* division cuts off the cell which goes to form the auricle, while its sister cell adds to the upper lobe. In view of this, it is possible that the auricle represents an amphigastrium, and the apparent upper lobe the fused upper and lower lobes. These latter will, however, be together referred to as the upper lobe throughout this paper.

The mature auricle in various species of *Physiotium* has already been described and figured by Jack.* In *P. giganteum* it is a slightly bent subulate sac (fig. 5). The circular mouth, bounded by a strong collar, opens on the side next to the stem; it is closed within by a curtain from which hang the two dissimilar flaps of the valve (fig. 6). One of these flaps is exactly like the rest of the auricle in texture; the other, the *clapper*, consists of squarish, thin-walled, empty cells, which are evidently dead. At the junction of the latter with the curtain the cells are elongated transversely, and the walls are thinner; and to this is no doubt due the easy movement of the clapper whereby the opening and closing of the valve is effected. The auricle is attached to the upper lobe of the leaf from the lower side of the mouth to its base (fig. 7).

An interesting provision for the conduction of water into the cavity of the auricle may be here described. The upper lobe is well

* "Monogr. d. Lebermoosgattung Physiotium," *Hedwigia*, 1886.

adapted, both by its shell-like form and its position on the upright stem, for catching and holding water (see fig. 2), which, owing to its somewhat oblique posture, will naturally flow towards the auricle. It is prevented from running off the lobe by the lower edge being strongly incurved, thus forming a channel in which the water may collect, and leading to the mouth of the auricle. The curved edge of the lobe is continued by a projection into the mouth, the upper edge of which is raised to prevent the water escaping at the junction of the two members, while a depression below forms a channel which ensures the entrance of the water into the auricle (fig. 7).

The development of the upper lobe of the leaf presents no special features, except that in a young stage it hangs three mucilage papillæ over the apex of the stem (fig. 9), remains of which can be seen in the mature lobe in the interruptions of the otherwise regular outline and boundary layer.

The development of the auricle is naturally much more complex (fig. 8). When the rudiment consists of a few cells only, it rapidly becomes rolled in until it has assumed a slipper-like form, which is evidently due to localised growth similar to that occurring in the bladders of *Utricularia*. The apex now bifurcates (indicated in the youngest auricle in fig. 8). One of the new apices grows directly, by a two-sided apical cell, into the clapper of the valve; the other divides into three well-marked apical cells, and these give off a few segments, the products of which subsequently grow more rapidly than the apical cells themselves, filling up the gaps between them, and an approximately semicircular plate of cells (the rigid flap) results. Meanwhile the curtain has been formed by the circular depression of the region behind the growing valve-flaps, and the collar formed by the folding of the tissue around. The stem-tissue from which the auricle arises has become, immediately below the mouth, an annular merismatic zone, while that of the upper lobe has become connected with it, so that the two now arise together (figs. 5 and 6).

Both the upper lobe and the auricle (including the rigid flap of the valve) have a marked cellulose thickening of the wall (fig. 9). The large pits enable the water to pass easily from cell to cell, while, as may be seen from the ready crumpling of their lamellæ, they are no doubt useful in enabling the foliage, especially the auricle, to contract on drying, which decreases the evaporating surface, and hinders the entrance of air into the cavity of the auricle. There is no special provision, as might have been expected, for the entrance of water from the reservoir into the cells of the auricle, no pits whatever occurring on the walls immediately surrounding the cavity (fig. 10). The wall-thickening, as so often occurs in the alteration of cell-walls, begins in the corners, and at an early stage presents an elegant appearance, owing to the trilobed structure first produced (fig. 11).

There is no differentiation in the tissue of the mature stem, except that the outer cells are rather more strongly thickened than those within; the thickening is much like that of the leaves,

except that the transverse walls remain unthickened. Very large cells, with rather conspicuous nuclei, occur in the apical region, but disappear on further development (fig. 12).

The branching, as often obtains in the liverworts, is endogenous. At an early stage the rudiment is covered by the two outer layers of stem-cells, which it subsequently breaks through (fig. 13).

This work has been done at the Royal College of Science, under the direction of Prof. Farmer, to whom I am indebted for the material, and for advice and assistance given throughout its examination.

PS.—Since the above work was completed, a paper ("Archegoniatenstudien") has been published by Prof. Goebel in *Flora* for December last, in which the structure of the apex and the development of the auricle are described in another species (*P. conchæfolium*, and his results agree in the main with those given above. The remaining points, however, are not covered by his paper.

EXPLANATION OF PLATE 339.—FIG. 1. Small shoot, seen dorsally; nat. size. 2. Part of fertile shoot, seen ventrally; *f*, young fruit; *u*, the upper lobe; *a*, the auricle attached to it; × 5. 3. Transverse section of apex; × 350. 4. A similar section a little lower, with three developing auricles; the apparent periclinal divisions in the leaves are due to the section passing through their insertions; × 350. 5. Auricle seen from within; *v*, its valve; the dotted lines indicate the position of the upper lobe, and the portion of the auricle torn away in removing it is indicated below; × 125. 6. Diagrammatic longitudinal section of an auricle; *c*, clapper; *r*, curtain; the rigid flap is indicated by dotted lines; × 125. 7. Upper lobe with auricle attached, showing water-channel; × 25. 8. Longitudinal section of apex, with developing auricle to the right, and upper lobes to the left; *c*, rigid flap; *f*, clapper; × 350. 9. Leaf-cells, showing wall-thickening and pits; × 350. 10. Part of transverse section of auricle; *p*, pits; × 350. 11. Development of wall-thickening shown in fig. 9; × 350. 12. Part of transverse section near apex; × 350. 13. Part of longitudinal section near apex, with endogenous shoot-rudiment; × 350.

SUPPLEMENT TO SYNOPSIS OF *MALVEÆ*.

BY EDMUND G. BAKER, F.L.S.

THE following additions and corrections have come to hand during the progress of my Synopsis through the press:—

Althæa corymbosa Swartz = *Pavonia paniculata* Cav.
Althæa racemosa Swartz = *Pavonia racemosa* Swartz.

ALTHÆA (ALCEA) SINTENISII (Haussk. in herb.).
Hab. Turkish Armenia, *Sintenis*, No. 2617!

MALVA SIMPLICIUSCULA Steud. and M. COGNATA Steud. in Flora, 1856, pp. 425 and 426, are closely allied to *M. parviflora* L.

Malva cordistipula Steud. = *Malva nicæensis* All.

MALVA LIOCARPA Philippi in Anales Univ lxxxii. p. 18, is closely allied to *M. nicæensis* All.

HESPERALCEA Greene, Pittonia, ii. p. 301.

H. MALACHROIDES = *Malva malachroides* H. & A. Bot. Beech. p. 326. *Sidalcea malachroides* Gray in Proc. Am. Acad. vii. p. 332. Prof. Greene has founded this genus upon a Californian plant which has hitherto been generally included among the Sidalceas. The name was first suggested in the *Flora Franciscana*, p. 106. When enumerating this species, together with *S. vitifolia* A. Gray, which seems closely allied, I noted that they appeared unlike any other members of the genus. Prof. Greene states that it is not only different in habit and aspect from either *Malva* or *Sidalcea*, but that its cotyledons are a specially distinguishing feature, "being narrowed very abruptly to the petiolule," instead of having "neatly cordate-rounded lobes at the base." *Hesperalcea* has a double staminal column; the filaments of the outer series being more or less united into sets. The style is longitudinally stigmatose.

MALVASTRUM DIMINUTIVUM = *Malva diminutiva* Philippi, Verz. auf Antofagasta et Tarapaca (1891), p. 8.

Hab. Chili. Paroma, alt. 3800 metres.

Related to *Malvastrum antofagastanum* and *M. tarapacanum*.

MALVASTRUM STIPULARE Philippi, *l. c.*

Hab. Chili. Machucha.

MALVASTRUM SUBACAULE = *Malva subacaulis* Philippi in Anales Univ. lxxxii. p. 14.

Hab. Andes. Prov. Curico, *M. Vidal.*

Malva (*Malvastrum*) *Reichei* Philippi, *l. c.* p. 19, gathered in Chili nr. Constitucion by C. Reiche, may be synonymous with *Malvastrum capitatum* (Cav.).

TARASA Philippi, Verz. auf Antofagasta et Tarapaca (1891), p. 10.

T. RAHMERI Philippi, *l. c.* tab. 1, fig. 1.

Hab. Chili. Prov. Tarapaca, at Sibaya! The native name for this plant is *Tarasa*.

T. ALBERTI Phil. in Anal. Univ. lxxxii. p. 321.

Hab. Argentine Andes, nr. Portezuelo del Tinguiririca, *Albert.*

This genus is allied to *Malvastrum* and *Cristaria;* the carpels being monospermous and appendaged, bearing at their apex two plumose tails. *Tarasa Rahmeri* Phil. is either synonymous with, or very closely allied to, *Malvastrum plumosum* A. Gray, and I rather doubt the advisability of separating *Tarasa* from *Malvastrum*. If *Malvastrum* is to be divided at all, by far the most important division would be to form a separate genus for the phyllanthophorous species—to adopt, in fact, the arrangement of Weddell in the *Chloris Andina*. I notice that Dr. Philippi, when diagnosing the genus *Tarasa*, spells it thus, but in describing the second species he writes *Tarassa*.

CRISTARIA JARÆ Philippi, Verz. auf Antofagasta und Tarapaca (1891), p. 9.

Hab. Chili. Prov. Antofagasta. Cortaderas.

The wing in this species is small.

C. FLEXUOSA Philippi, *l. c.* p. 10.

Hab. Chili. Jaina.

C. OXYPTERA Philippi in Anales Univ. lxxxii. p. 305 (1893).
Hab. Chili. Prov. Atacama!
The leaves of this plant are entire.

C.? VIDALI Philippi, *l. c.* p. 306.
Hab. Patagonia. Santa Cruz.

C. HISPIDA Philippi, *l.* c. p. 307.
Hab. Chili, nr. Coquimbo.

C. AUSTRALIS Philippi, *l. c.* p. 307.
Hab. Southern Chili.

C. GLABRATA Philippi, *l. c.* p. 308.
Hab. Chili. Prov. Coquimbo.

C. HASTATA Philippi, *l. c.* p. 308.
Hab. Mendoza.

C. INCONSPICUA Philippi, *l. c.* p. 309.
Hab. Chili. Prov. Coquimbo.

C. SUNDTI Philippi, *l. c.* p. 310.
Hab. Chili. Prov. Atacama.

C. HUMILIS Philippi, *l. c.* p. 310.
Hab. Chili. Prov. Atacama.
Allied to the preceding species.

C. DIVARICATA Philippi, var. *β.* HIRSUTA Philippi, *l. c.* p. 313.
Hab. Chili. Piedra Colgada.

C. ROTUNDIFOLIA Philippi, *l. c.* p. 314.
Hab. Chili. Prov. Atacama.

C. PILOSA Philippi, *l. c.* p. 315.
Hab. Chili, nr. Copiapo.
Resembles *C. aspera* Gay.

C. PATENS Philippi, *l. c.* p. 316.
Hab. Chili. Prov. Atacama.

C. BORCHERSI Philippi, *l. c.*
Hab. Chili. Prov. Antofagasta, *Aug. Borchers.*

C. SETOSA Philippi, *l. c.* p. 317.
Hab. Chili, nr. Taltal, *Borchers.*

C. PARVULA Phil. *l. c.* p. 317.
Hab. Chili. Prov. Copiapo.

C. CARRIZALENSIS Phil. *l. c.* p. 319.
Hab. Chili. Carrizal Bajo, *Thomas King.*

C. BIPINNATIFIDA Phil. *l. c.*
Hab. North Chili, *V. Gormaz.*

C. LARRANAGÆ Phil. *l. c.* p. 320.
Hab. Atacama, *A. Larranaga.*

C. TRIFIDA Phil. *l. c.* p. 321.
Hab. Chili. Caldera, *G. Geisse.* Atacama, *A. Larranaga.*

There is also in the herbarium of the Natural History Museum, S. Kensington, a plant named by Dr. Philippi *Cristaria microptera*, which I believe is at present unpublished: it may be a synonym of one of the preceding, but I only know these from Dr. Philippi's descriptions.

Sida abutilifolia Mill. = *Sida veronicæfolia* Lam.

Sida grewoides Guill. & Perr., var. β. ovata A. Terraciano in Ann. del Ins. Bot. di Roma, Ann. v. Fasc. 3, p. 112. *S. ovata* Forsk. Desc. pl. Aeg. p. 124, No. 84; Garcke in Eichler und Garcke Jahrb. Kön. bot. gart. Berl. ii. p. 331.

Hab. North-east Africa.

Sida Bakeriana Rusby MSS. in Pl. Bolivianæ Distr. 1893.

Hab. Bolivia. Mapiri, No. 1477, *M. Bang*!

Allied to *Sida glomerata* Cav.

Wissadula mucronulatum A. Gray; Torrey Mex. Bound. p. 39. *Abutilon mucronulatum* A. Gray, Proc. Am. Acad. v. p. 175.

Hab. Mexico! Mexican Boundary.

I rather doubt this being distinct from *W. zeylanica* Med.

Horsfordia Purismæ Brandegee = *H. rotundifolia* S. Wats.

Abutilon (*Wissadula*) *cinctum* Brandegee = *Bastardia hirsutiflora* Presl.

Abutilon hastatum Ridley in Trans. Linn. Soc. vol. iii. pt. 9 p. 279 (1893).

Hab. Malay Peninsula, at Kwala Berar.

Sphæralcea Orcuttii Rose in Contr. Nat. Herb. vol. i. No. 8, p. 289.

Hab. California, *C. R. Orcutt*, No. 2210.

The carpels of this plant are 1-seeded, with a minute terminal portion.

Dr. Otto Kuntze, in his *Revisio Genera Plantarum*, p. 71, substitutes the name *Malveopsis* Presl (Bemerk. p. 19) for *Malvastrum*, and in this he has been followed by recent American writers. Presl's genus is founded on *Malva anomala* Link & Otto, Pl. Select. t. 22, a plant which has not been definitely determined (see *Flora Capensis*, p. 164), but which Dr. Kuntze considers identical with *Malvastrum calycinum* Gray & Harv. I have referred it doubtfully to *Sphæralcea elegans* Don (Journ. Bot. 1893, p. 366), and, so far as the figure and description of Link and Otto go, see no reason for altering my opinion. It is certainly not identical, as Dr. Kuntze supposes, with the figures of *Malva calycina* (Bot. Reg. t. 297) and *M. amoena* (Bot. Mag. t. 1998) which Gray and Harvey (Fl. Capensis, p. 160) cite for *Malvastrum calycinum*; nor does it agree with the specimens referred to under those figures which are in the National Herbarium.

LINOCIERA COTINIFOLIA = CHIONANTHUS VIRGINICUS.

By James Britten, F.L.S.

For nearly two hundred years the plant which now usually appears in books as *Linociera cotinifolia* has, under one or other of its synonyms, encumbered botanical literature, and its identity has, apparently, eluded research. Mr. C. B. Clarke, in the *Flora of British India* (iii. 611), came so very near the solution of the mystery that it is to be regretted that he did not take the very

short step necessary to bring his researches to a successful issue. He pointed out, rightly enough, that the name rested upon t. 241, fig. 4, of Plukenet's *Almagestum*, but it did not occur to him to consult the specimens on which Plukenet's figure was based. That the figure itself did not suggest the solution is probably to be accounted for by the *primâ facie* unlikeliness that a plant called "arbor zeylanica" was really a native of North America.

The first notice of the plant, as has been already said, is that of Plukenet in 1720 (*Almagestum*, p. 44, *Phytographia*, t. ccxli, fig. 4), who defines it as "Arbor Zeylanic, Cotinifoliis subtus lanugine villosis, floribus albis, Cuculi modo laciniatis." In Plukenet's Herbarium (Herb. Sloane, xciii, fol. 209, and xcv, fol. 78) are specimens of the plant, referred in each case to the plate in *Phytographia*, and to Ray's *Historia Plantarum* (iii., Dendrologia, 124): the latter specimen is labelled by Plukenet, "Arbor indica Cotini foliis subtus lanugine villosis floribus albis Cuculi ad instar laciniatis ex insulâ Zeylon." These specimens and the figure in *Phytographia* unmistakably represent *Chionanthus virginicus* L.

Burmann (*Thes. Zeyl.* 31 (1737)) cites Plukenet's description, and adds the reference to Ray; and the plant having thus found its way into a Ceylon list, attracted the discriminating attention of Linnæus (*Fl. Zeyl.* 5 (1748)), who quotes Burmann's reference to Plukenet as a synonym of his *Chionanthus pedunculis multifloris paniculatis*, founded on two specimens in Hermann's Herbarium. But in a note he expresses a doubt as to Plukenet's plant, which he rightly identifies with Catesby's "Fringe Tree." He says:—"Utrum hæc eadem sit varietas *Chionanthi pedunculis trifidis trifloris*, quam delineat Pluk. phyt. 241, f. 4, & Catesb. carol. 1, t. 68, vel an distincta species, dubius hæreo; certe facies hujus admodum recedit." Five years later his doubt had been solved, and in the *Species Plantarum*, p. 8 (1753), he cites Petiver's and Catesby's figures as types of his *Chionanthus virginica*, although he quotes Burmann's description (which is really Plukenet's) under his *C. zeylonica* (now *Linociera purpurea*). He does not seem to have realised that the Burmann-Plukenet description and the figure in the *Phytographia* referred to one and the same plant.

Lamarck (*Encycl. Meth.* i. 735 (1783)) seems to have thought Plukenet's plant the type of Linnæus's *C. zeylonica*, which was therefore scarcely separable from *C. virginica*. He says:—"Cette plante a de si grands rapports avec la précédente, qu'il semble qu'elle n'en soit qu'une variété": his description and figure (t. 9, fig. 2) show this, for he describes the leaves as "subtus villosus," and the figure, as DeCandolle has pointed out (*Prodr.* viii. 297) is an adaptation of Plukenet's. *C. zeylanica* Lam. is therefore rightly placed by DeCandolle as a synonym of *Linociera cotinifolia*.

For the presence of Plukenet's plant in our books as a distinct species, Willdenow is responsible. In his *Species Pl.* i. 47 (1797), he separates it from *C. zeylanica** as "*C. cotinifolia* W.," giving a short diagnosis, followed by citations from Burmann and Plukenet,

* Linnæus wrote *zeylonica*.

and by a reference to "Houttuyn Lin. Pfl. Syst. i. p. 204, t. 5, f. 1 (1777)." This figure, according to the text, is based on a specimen from Burmann, and I think represents *L. purpurea*, although this may be called in question. A note by Solander in our copy of Willdenow says that this figure was the foundation of *L. cotinifolia:* he writes, "Species e sola figura Houttuynii quam hic *Ch. zeylonica* adscribit, et petala 5 vel 6 pinxit." Houttuyn's plant is apparently a combination of *Chionanthus virginica* and *Linociera purpurea*.

Vahl (*Enum.* i. 46 (1805)) transferred the plant to *Linociera*, and under this name it figures in various books down to the present time, such as Don's *General System* (iv. 53) and DeCandolle's *Prodromus* (viii. 297), having gradually acquired a diagnosis, while steadily eluding identification. Thwaites (*Enum.* 189) says, "Of *Chion. cotinifolia* Willd., founded on Plukenet's description, quoted by Burmann in *Thes. Zeyl.* p. 31, I know nothing, nor am I acquainted with any species of this genus, indigenous to Ceylon, which has the under side of its leaves villous."

In this unsettled state the plant might have remained for another century or more, seeing that the *Flora of British India* was content to leave the matter unsolved, had not Dr. Trimen, whose carefulness in searching out and settling obscure points deserves every recognition, written home to ask how he could dispose of *L. cotinifolia* in his *Flora of Ceylon*. The investigations necessary to settle this question have resulted in the identification above recorded.

By what confusion Plukenet's plant got designated "arbor zeylanica" I do not know, nor is it of especial importance. What is to be desired is that botanists who have access to the Sloane Herbarium should understand its importance in settling questions connected with the early history of botany in this country, and the readiness with which it may be consulted. Had Mr. Clarke, on one of his visits to the National Herbarium, realised the ease with which the problem in question could have been solved, he would not only have added to the completeness of his excellent work on the Indian Flora, but would have removed from me the possibility of wearying the readers of this Journal with these results of my investigations.

RUBI NOTES.

By the Rev. W. Moyle Rogers, F.L.S.

These notes are supplementary to my "Essay at a Key to British Rubi," published in this Journal in 1892, 1893. The exceptionally long summer of 1893 was very favourable to the study of Rubi in the field, and I am greatly indebted to my many correspondents for much valuable information illustrating and in some instances correcting portions of my "Essay." There are, it seems hardly necessary to say, several difficulties that are not yet soluble; but in the many instances where such difficulties

have been removed within the last twelve months, or *some* light gained, I have thought it best to communicate such information as I could before the commencement of another season in the field.

We must, I think, be anxious, all of us, to keep down and, where it may be possible, reduce the number of our Rubi "species." The mainly artificial character of our present groups is answerable for some of our difficulty here. In two instances I have already ventured to disregard the limits imposed by those groups;—I mean, in my treatment of *R. pulcherrimus* and *R. anglosaxonicus*. The name *R. pulcherrimus*, as applied in my "Essay," covers a series of forms, ranging from a state which is practically eglandular and non-aciculate to one which is highly glandular and aciculate in st. and pan. Here I have not proposed giving even a varietal name, as I could detect no marked difference in the several plants beyond the presence or virtual absence of gland-tipped organs and acicles. I should now extend the application of the name yet further, so as to make it include the slightly varying whitish-flowered eglandular form referred to as "a. *R. ? dumosus* Lefv." In the case of *R. anglosaxonicus* I have given varietal names to two plants, "b. *raduloides*" and "c. *setulosus*," which differ from the type with which they are associated in several obvious particulars other than their stronger armature, and yet in their general features so decidedly recall it as to justify the arrangement. Following the same lines, I now propose to remove *R. oigocladus* Muell. & Lefv. from its place as a "species" at the end of the *Bellardiani* to what seems its more natural position as a strongly marked var. under *R. mucronatus* Blox.; and also to place as a var. under *R. Gelertii* Frider. a striking plant from Cheshire and Scotland which Dr. Focke considers to be very near to *R. adenanthus* Boul. & Gillot, and which seems hardly to differ from *Gelertii*, except in the *Radulæ*-like clothing of the stem. I had intended suggesting "*adenanthus* Boul. & Gillot?" as a varietal name for this, but the Rev. E. F. Linton has now shown me the Norfolk plant which he proposes distinguishing as var. *criniger*, and they are practically identical with those I have referred to from Cheshire and Scotland. I therefore gladly adopt his new name in preference to the doubtfully correct *adenanthus*. My Cheshire specimens were collected by Capt. A. H. Wolley Dod at Edge Park in 1892, and the Scottish by the Rev. E. S. Marshall in the same year between Fowlis and Dingwall, E. Ross. Like the Norfolk *criniger*, they differ from typical *Gelertii* in having their st. far more hairy, as well as more plentifully supplied with small bristles and stalked glands, and also in having frequently a more gradually acuminate term. lt. *R. Gelertii* seems more variable with us than it is in Schleswig, but I agree with Mr. Linton in thinking that some of his Norfolk specimens cannot reasonably be kept apart from the typical plant.

It has been pointed out to me that the use of an initial capital letter in the case of specific names derived from places, though so frequently found in the best authors, is inconsistent with the general use, as shown, *e. g.*, in *Polygala austriaca* and *Genista anglica*. It seems desirable therefore to remove such inconsistency

by substituting *R. dumnoniensis* for *R. Dumnoniensis*, *R. mercicus* for *R. Mercicus*, &c.

R. affinis W. & N., b. *Briggsianus*, n. var. L. considerably smaller, and greener beneath. *Term. and intermediate lts. oval-acute*, or slightly acuminate, *with rounded or scarcely emarginate base;* very different from those of the typical plant. Pan. less leafy above, very compound. *St.* usually *weak and low-growing* as compared with the strong pan.

This is the *R. affinis* of the *Fl. Plym.;* a frequent plant in Dev. and E. Cornw., where it takes the place held by the type in S. Engl. It may prove our prevailing, if not our only, form in the extreme west, as the Rev. R. P. Murray has found it in Somerset, and Mr. Griffith (so far as I can judge from a rather imperfect specimen) in N. Wales.

In Potonie's *German Flora* (ed. 1, p. 253) Dr. Focke proposed making *R. rhamnifolius* W. & N. an aggregate species, and distinguishing the typical continental form as subsp. *germanicus*. So in his "Notes on English Rubi," published in this Journal in 1890, we find "*R. rhamnifolius* W. & N." introduced, obviously in this aggregate sense, and the explanation added that our "English *R. rhamnifolius*" is near his var. *stenoplos*. Dr. Focke now writes to me, "My var. *stenoplos*, growing in the western parts of Germany near the Rhine, cannot be clearly distinguished from the *R. rhamnifolius* of British authors." It seems best for us therefore to retain the aggregate name in our lists, enclosing it perhaps in square brackets to show that the typical plant is so far unknown in Britain, and adding "var. *stenoplos* Focke" to represent our common plant.

R. nemoralis P. J. Muell. As suggested in p. 52 of my "Essay" (Additions and Corrections), this name should be dissociated from the bramble (or brambles) which we used to call *R. umbrosus* Arrh. A plant answering well to Genevier's description of Mueller's *nemoralis* (as Dr. Focke also thinks), is abundant in the Bournemouth neighbourhood, and may be distinguished from its allies by the following characters:—*R. nemoralis* P. J. Muell. (Genev., non Bab.). St. rather high arching, subsulcate, glabrescent or with a few short hairs. Prickles fairly strong, falcate or declining, broad-based. L. 5-nate-digitate (apparently never 7-nate), flat. *Lts. green on both sides*, ultimately only slightly paler beneath, glabrous or nearly so above, *with a few very short hairs on the nerves beneath*, finely evenly serrate in the lower half, but often with compound patent teeth above the middle; *term. lt. roundish-obovate, cuspidate-acuminate, narrowed more or less to the nearly entire or emarginate base*, with long petiolule (sometimes nearly half as long as the lt.); bas. lts. often overlapping the interm. *Pan. long and very lax*, with 3-, 4-, 5-nate l. below and usually several 3-lobed and simple ones above, *pyramidal at first, with the lower racemose-corymbose branches greatly lengthening upwards as the season advances;* rachis grey, with close felt and a few loose hairs, *without stalked glands;* prickles falcate or deflexed; bracteoles numerous, 1–3-fid. Sep. grey, cuspidate or cuspidate-acuminate, usually aciculate, reflexed in fl. and fr. Pet. conspicuous, narrowed below, pink. Stam. exceeding styles. Hants, Dors., Somerset.

This handsome bramble seems to me to be nearest on the whole to *R. pulcherrimus* and *R. imbricatus*. Dr. Focke, however, in Koch's *Syn.* ed. 3, has placed it as an allied form after *R. macrophyllus*; and it certainly shows considerable resemblance to the *R. glabratus* Bab., which in our lists has hitherto ranked as a var. of *macrophyllus*, though not without recent misgivings on Prof. Babington's part, as appears from his remarks in *Journ. Bot.* 1886, 225, 226. I must own that after a careful study of these plants (in the field as well as in the herbarium), I am strongly of opinion that the alliance of our *glabratus* with Mueller's *nemoralis* is closer than it is with *macrophyllus*. I should therefore prefer regarding it in future as a var. of the former, to be distinguished from it by the following characters:—*Pan. much narrower and more cylindrical*, with far shorter *subequal lower branches and longer-pedicelled fl. Pet.* comparatively *small* and inconspicuous. *Sep. more acuminate and more strongly reflexed.*

This var. is locally abundant and very constant in character in the valley of the Wye (Heref., W. Glost.). I have not yet seen it in any of our southern counties, though the Christchurch plant referred to in my "Essay" (*Journ. Bot.* 1892, 205) seems to take one step towards it away from typical *nemoralis*.

I had renewed opportunities of studying the Devon *R. ramosus* in the Plymouth neighbourhood last summer, and of comparing it with a very full series of *R. mercicus* Bagnall (the plant referred to as "the *usual ramosus* of the Midlands" in my "Essay," and fully described in this Journal in 1892, p. 372); and I find myself forced to the conviction that the latter is much more nearly allied to *R. durescens*, *R. villicaulis*, and *R. pulcherrimus* than to the Devon plant, which, but for its glabrous (or very nearly glabrous) stem, might seem most at home among the *Discolores*.

R. villicaulis Koehl. What I have spoken of in my "Essay" as "the nearly glabrous form common in S. England," and which I have now received from N. Ireland, Scotland and Wales, as well as from many parts of England, north and south, is considered by Messrs. Friderichsen and Gelert to be identical with the Scandinavian *R. Selmeri* Lindeb.; and it certainly seems to me indistinguishable from very good specimens of that plant which I have received from them. I would therefore suggest our classing it in future as var. b. *Selmeri* Lindeb. It is unquestionably the *R. affinis* Blox., and differs from typical *villicaulis* by its *long styles* (equalling or exceeding the stamens), its *strong falcate prickles*, its greener and more roundish lts., and its *much more glabrous condition* generally.

Resembling this in some respects, but looking rather intermediate between it and *R. gratus*, comes a Dorset plant (from Norden Heath near Corfe Castle, and Branksome Park near Bournemouth), of which Mr. Gelert writes to me, "Seems to be identical with Danish and Swedish *R. villicaulis* var. *insularis* (F. Aresch.)." The Rev. E. S. Marshall has also collected what appears to me the same form from near Fowlis, E. Ross, where he found it "locally abundant." This we may distinguish as—

Var. c. *insularis* (F. Aresch.). Like var. *Selmeri*, but *with thicker*

felted l., far more densely hairy pan., larger and less strongly reflexed sep., and styles much shorter than stamens. The leaf-serration, though perhaps a little variable, also seems to me much less wavy, and the prickles less constantly falcate. I must add, however, that I am at a loss to name any very definite characters by which to separate this var. from the typical plant (so far as I understand that), except its thicker yellower foliage, and (as they appear to me) its larger and more loosely reflexed sep. At the same time the whole plant looks softer, the fl. more showy, and the panicle-rachis more conspicuously flexuose. In my Norden Heath specimen there is in the term. lt. a strong tendency to lobing or subdivision on one side, of which I see no sign in my other British specimens or in those I have from Denmark and Schleswig. Continental botanists in general seem agreed in considering *insularis* a var. or subspecies of *R. villicaulis;* but Areschoug himself, when he published his description ("Some observations on the genus *Rubus*," p. 139), placed it next after *R. polyanthemos* (*R. pulcherrimus*), and among the *Discolores*, an arrangement in which none of us, I think, would be disposed to follow him.

The plant which has been long known to some of us as "Bloxam's *calvatus*" now appears to me, as it does I believe to all other botanists who have seen it growing, a very strongly marked var. or subspecies. It seems best placed under *R. villicaulis* as var. *calvatus* (Blox.), though Bloxam himself did not *confine* that name to this particular plant. It is easily separable from the other varieties by the following characters:—

Var. d. *calvatus* (Blox.). Prickles rather crowded and unequal, mostly short. *Lts. convex*, green on both sides, *only slightly hairy on the veins beneath, with coarse recurved toothing; term.* and intermed. remarkably *oblong*, with rather short point and cordate base. *Pan. very long and lax, with large foliage*, wavy prickly rachis, and *sep. only loosely reflexed in fr.*, often more or less glandular and aciculate. Derby, Staffs., Leic., Warw. Not yet observed in the extreme south, the Devon plant thus named by the late Mr. Bloxam belonging either to typical *villicaulis* or to the so-called "south country *calvatus*" distributed by me from the Bournemouth neighbourhood (1886–1890), and described above as var. *Selmeri*. I may add that in some of the Twycross (Leic.) specimens of Mr. Bloxam's own gathering, and now in my herbarium, the special characters of this var. are distinctly less marked than usual, and that such divergence as there is favours the arrangement by which *calvatus* is placed under *R. villicaulis*. On the other hand, the Rev. W. H. Purchas has long held, and I think with very good reason, that the Shirley and Ednaston (Derb.) plant, which has been named *R. melanoxylon* Muell. & Wirtg. by Dr. Focke, cannot possibly be kept specifically distinct from *calvatus*, as it has all its most characteristic features, and seems to differ only (as Mr. Purchas has pointed out) in being more aciculate and glandular in st. and pan., and having a narrower term. lt. Of this I have lately seen a Surrey specimen, gathered by the Rev. E. F. Linton at Tilford, which is the most southern locality yet known for it.

As it seems to be admitted now that there are English forms of *R. pubescens* Weihe and *R. thyrsoideus* Wimm., these names can hardly be excluded from our list. They must, however, take their place there at present only in an aggregate sense. In the case of *R. pubescens*, we appear to have one well-marked form rather widely spread in S. England, differing from the German plant especially in its much weaker prickles and somewhat narrower lts.; and it might be convenient to distinguish this by the varietal name *subinermis*. This is really the plant described fully in my "Essay" as "*R. pubescens* Weihe?"

Plants which must, I think, be referred to an aggregate *R. thyrsoideus* I have now seen from the counties of Lincoln, Derby, Notts, and Hereford, and also from Kildare; as well as from the older localities in Warwick and Devon.

R. mollissimus, n. sp. St. angular, with striate faces and a good many scattered and stellate hairs, eglandular, reddish brown. Prickles moderate, subequal, patent or slightly declining from dilated compressed base. *L.* large, 5-nate-digitate, *concave*. *Lts. remarkably rugose*, *brittle*, dark green and hairy above, *very softly hairy or greyish-felted beneath*, finely serrate for the most part, but more or less uneven in outline, and occasionally having compound or incised serrations in the upper half; term. roundish-obovate, with entire base, and cuspidate-acuminate point. *Pan. with broad cylindrical-truncate top*, and (when well-developed) 2 or 3 short very distant axillary branches; *most of the branches being somewhat cymose, and the upper ones mostly patent or divaricate*, rather crowded, and with one or more simple floral leaves; *rachides straight*, *densely clothed* (*as are the sep.*) *with somewhat yellowish hair*, eglandular, the prickles rather few, subulate. Sep. cuspidate, reflexed. Pet. roundish, with short claw. *Stam. very numerous and long*, far exceeding the styles, pale lilac (like the pet.) or whitish. Heaths and hedges, Dev., Dors., and W. Sutherland.

This beautiful plant was found by Mr. Briggs in 1885, by the Holsworthy and Thornbury Road, N. Dev. It also grows in some quantity between Corfe Castle and Swanage, Dors., at Verwood, in the same county, but near the Hants border, and at Tongue, W. Sutherland. In some respects it recalls *R. silvaticus* and *R. leucandrus;* but Dr. Focke thinks that it comes still nearer to his *R. myricæ*, though obviously dissimilar in some important characters.

R. lasioclados Focke. Dr. Focke has thus named a bramble found last summer by Rev. E. S. Marshall at Paddlesworth, E. Kent. It is densely hairy in st. and pan., and has thickly felted l., large broadly elliptic or suborbicular white pet., and styles nearly equalling stamens. It thus strongly recalls some of our forms of *R. leucostachys* Schleich. On the other hand, in its eglandular pan. and very conspicuous fl. there is a look of *R. argentatus* F. J. Muell., under which Dr. Focke formerly placed it as a var. (*Syn. R. G.* p. 198); but its sep. are more or less patent after flowering, and the crowded falcate prickles on pan.-rachis are very remarkable. Dr. Focke now considers that one of its nearest allies is the "*angustifolius*" of my "Essay"; so I should propose placing it

after that as a var. of *R. leucostachys* Schleich., though, I regret to say, I have not been able to secure Mr. Marshall's agreement with such an arrangement.

A further study of the living bushes last summer has convinced me that we have a well-marked var. of the true *R. Borreri* Bell.-Salt. in the form described and named *dentatifolius* by the late Mr. Briggs in *Fl. Plym.* p. 121. I have a beautiful series of specimens collected by him from 15 different localities (14 Devon and 1 E. Cornwall), and I know it, from my own observation, to be a locally abundant and constant form over the whole country from Plymouth and Launceston, in the west, to Okehampton and Haldon Hill near Exeter, to the north and east; the typical plant being thus far unknown in the province. I add a fresh description, as that in *Fl. Plym.* was written to differentiate it from the strong state of *R. Sprengelii*, formerly miscalled *Borreri*, instead of from Dr. Salter's plant (v. *Journ. Bot.* 1892, p. 271):—

Var. *dentatifolius* Briggs. *St. comparatively destitute of stalked glands. Lts. much narrower and greener, remarkably concave or incurved*, coarsely dentate, with the larger teeth less frequently patent; *term. narrowly ovate or oval, with very long gradually acuminate point. Pan.-rachis with fewer longer hairs and more unequal and more numerous acicles and stalked glands.* A very conspicuous bramble, growing in large clumps in heathy places and on roadside banks, with long stout quite prostrate st., and crowded l. of curiously narrow incurved yellowish lts.

My description of *R. radula* Weihe in my "Essay" (*Journ. Bot.* 1892, p. 299) must be understood in an aggregate sense,—exclusive of course, of the two varieties there described separately under the names *Bloxamianus* and *sertiflorus*. It now seems clear to me that this aggregate description really covers three well-marked forms, which it will be convenient to distinguish in future as varieties, as follows:—

a. Typical *radula*. *R. melanoxylon* Blox. *St.-prickles* comparatively few, *equal and confined to the angles;* the armature on the faces of st. consisting of *short subequal acicles, bristles, and stalked glands*. Lts. unevenly sharply serrate; *term. broadly ovate and very gradually acuminate*. Pan. rather pyramidal, with crowded branches above, lax below; its *strong prickles long, subulate*, declining. I have seen this (the typical continental plant) in considerable quantity in Yorks., and as far south as Berks. I have also received it from Scotland.

b. *echinatoides*, n. var. *St.-prickles* many, *more unequal*, and *not strictly confined to angles;* the *armature on the faces* being also *unequal*. *Lts.* usually *narrow*, all *obovate, cuspidate-acuminate and strongly incise-serrate*, with *some of the larger compound teeth more or less patent* or recurved. *Pan.* hardly differing from the type in outline (except perhaps in being usually narrower and laxer), but *far more prickly, and having strongly falcate or deflexed prickles mixed with the subulate ones*. St. and pan.-rachis dark red in exposure. Approaches *R. echinatus* Lindl., *R. pallidus* Bab. (non W. & N.), and the more glandular forms of *R. anglosaxonicus* Gelert. I believe general in the north. Especially abundant in Yorks. Surrey.

c. *anglicanus*, n. var. *St.-prickles rather scattered and unequal. Lts. narrow*, cuspidate-acuminate, finely and nearly evenly and simply serrate; *term. usually obovate*, sometimes narrowly elliptic, *never broadly ovate*, and gradually tapering to a long point as in the typical plant. *Pan.* less interrupted, *lax throughout, with weak subulate prickles. Whole plant greyish.* In this var. there is nothing to remind one of *R. fuscus* W. & N., as there is in the nearly allied form which we are calling *R. sertiflorus* P. J. Muell. The prevailing and (apparently) only well-marked form of *R. radula* in S. England.

A place between *R. scaber* W. & N. and *R. fuscus* W. & N. seems the best for a Monm. plant to which Dr. Focke has just given without qualification the name *R. uncinatus* P. J. Muell. This puts it in that section of the *Radulæ* which I have named *Sub-Bellardiani*, and its chief prickles are so small and scattered that if it should be removed from that section of the *Radulæ*, room would have to be found for it among the *Bellardiani* proper. It was discovered last August by the Rev. E. F. Linton in the woods above Troy House, Monmouth; and Dr. Focke states that it is "exactly the same as the original *R. uncinatus* gathered by Mueller in the fir-woods of S.W. Germany." The following description is made from specimens kindly given to me by Mr. Linton:—St. bluntly angular, hairy, thickly clothed with slender acicles and stalked glands of various lengths. *Prickles slender, rather unequal and scattered*, from long compressed base, strongly declining, *whitish.* L. chiefly 5-nate-pedate. *Lts. thin, with crowded finely pointed but more or less compound toothing*, thinly hairy on both sides, paler and soft beneath; term. more or less obovate and narrowed to the entire or emarginate base, with fairly long acuminate point; *all the stalks and midribs rather thickly furnished with slender falcate and uncinate prickles.* Pan. narrowly cylindrical-truncate, with 1–3 short patent-erect distant branches below, and an ultra-axillary top of crowded patent 1–3-flowered branches; *rachis and ped. densely patent-hairy*, the hairs as a rule far exceeding the many stalked glands; *the weak aciculate prickles remarkably crowded, whitish, uncinate, falcate*, and declining. Sep. narrow, reflexed. Pet. white. Stam. exceeding styles.

R. rosaceus W. & N., var. *silvestris* R. P. Murr. MS. Under this name the Rev. R. P. Murray has described in MS. for his *Flora of Somerset* a woodland bramble which is very abundant in the Lynton (N. Dev.) neighbourhood, and has also been found by him in W. Somerset. It comes between typical *rosaceus* and var. *hystrix*, having the short and usually broad pan. of the former, and the narrow deeply cut lts. of the latter, the l. being much thinner than in either, chiefly 3–4-nate, and, when not 3-nate, strongly pedate. The st. are weak and quite prostrate, the prickles slender and much compressed, and the lts. as a rule remarkably narrowed to their base and deeply incise-dentate.

R. Powellii, n. sp. or n. var. *St. prostrate, conspicuously angular*, often sulcate, dull purplish red (as are the prickles and other arms) *hairy*, and thickly clothed with unequal gland-tipped hairs and bristles. Prickles chiefly on the angles, not very unequal, long-

pointed, with long compressed base, more or less declining, with a few falcate ones intermixed. Strong acicles and pricklets rather few. *L. small*, almost without exception 5-nate-pedate. *Lts. remarkably narrow and gradually acuminate, with very regular compound incise-serrate finely-pointed toothing*, dark green and usually quite glabrous above, much paler and soft with short hairs beneath; *all ovate* (or somewhat obovate) *and subcordate*, with many hooked prickles on their midribs as well as on the glandular hairy stalks. *Pan.* long, cylindrical, *with all the branches strongly ascending*, and (except the very lowest) cymose or pseudo-umbellate, the lower axillary ones distant, the ultra-axillary rather close, and *the topmost exceeding the long-pedicelled primordial fl.;* l. 3-nate, usually with one or more simple ones above; rachides felted, hairy and armed like the st. *Sep. triangular-acuminate, with long strongly-reflexed points.* Pet. small, narrow, bright pink. Pale stam. far exceeding pink-based styles. Young germens glabrous or very nearly so. Abundant and unvarying over the more elevated parts of Epping Forest (especially about High Beach and on both sides of the Epping Road); where it has been closely observed for the last six or seven years by its discoverer, Mr. J. T. Powell (v. Rpts. of Watson Exchange Club, 1887–1892). Capt. Wolley Dod has also gathered what seems a weak slightly modified form of this plant near the top of Shooter's Hill, W. Kent. A very elegant slender but free-growing bramble, at first sight recalling small forms of *R. echinatus*, though considerably different in armature, and in the thin green l. From *R. hystrix* (to which among our Rubi it perhaps makes the nearest approach) it differs constantly in the small very acuminate lts. and the strongly-reflexed sep. For the present, at all events, it seems best to place it alone as a strongly marked form allied to aggregate *R. rosaceus*. If ultimately it has to rank as a var. of that, its best place no doubt would be immediately after var. *hystrix*.

Last summer I had an opportunity of seeing the living bushes of a bramble discovered by the Rev. W. R. Linton near Shirley, Derb., which has been named *R. fusco-ater* by Dr. Focke. Probably this will have to take the place of "73. *R. badius* Focke ?, '*R. fusco-ater* Weihe?' Bab." of my "Essay." Dr. Focke would now put it after *R. hystrix*, and the following description is a translation of the one recently published by him in Koch's *Syn.* ed. 3:—"*R. fusco-ater* W. & N. in Blff. & Fngrh. *Comp. Fl. Germ.* i. p. 61; *R. G.* p. 72, t. 26. St. red-brown, more plentifully and unequally prickly than *R. hystrix*. L. mostly 5-nate. *Lts. thick, rather evenly and finely serrate, thickly covered with soft hairs beneath, pale or grey-green; term. broadly elliptic or orbicular* from shallow-cordate base, *with short point*. *Inflorescence* often *long*, with very hairy rachis, often *villous*, and densely beset with unequal glands and acicles. Curved prickles only present on main rachis of large pan. Sep. as in *R. hystrix*. Pet. elliptic. Stam. erect, somewhat higher than the usually greenish styles." The Derbyshire plant has what is evidently an exceptionally narrow term. lt., but in other particulars it agrees well with this description. It is very hairy and

strongly armed, darker in colour than *R. hystrix*, with finer leaf-toothing, and laxer pan.

There is a very interesting bramble which the Rev. E. S. Marshall has been observing for the last few years at Munstead, Surrey (where in his company I saw it growing in 1891), and which in 1891 he also found in good quantity in a wood at a short distance from the Bridge of Lochay, near Killin, Perthshire. It seems to be one of our many links between the *Cæsii* and our two preceding groups, having the foliage and pan. of *R. dumetorum*, the habit, weak growth and filiform stipules of the *Bellardiani*, with the very crowded and exceedingly mixed armature of the *Koehleriani*. I propose placing it in our list next after *R. tereticaulis*, and calling it (as Mr. Marshall has suggested) *R. britannicus*. I add here a brief description :—

R. britannicus, n. sp. *St.* bluntly angular or roundish, glaucous, *pale brown or yellow tinged with red*, thinly hairy, *densely clothed with prickles, acicles, bristles and stalked glands of various sizes, and coloured like the st.* Largest prickles with fine subulate points and very compressed bases, usually declining. *L.* 3–5-nate, *chiefly 3-nate, with lateral lts. gibbous or deeply lobed. Lts. thin, green and slightly hairy on both sides*, coarsely incise-dentate; term. broadly ovate or somewhat obovate, cordate, acuminate. *Pan. rather short* and few-flowered, lax below with patent or patent-erect branches, *cylindrical-truncate above, with fairly long 1–3-flowered branches;* rachis and ped. thinly felted, hairy, with crowded more or less falcate yellowish acicles and pricklets, and numerous stalked glands which very rarely exceed the hairs. *Sep. very aciculate and glandular, with long acuminate point, more or less clasping the fruit.* Pet. elliptic, rather large, but not contiguous, white. Stam. exceeding styles. Fr. plentiful. Drupelets rather few and large; young germens glabrous. Low bushes covering the ground in woods and wood-borders.

Strongly recalling *R. britannicus* in many respects (especially in st., l., and sep.), and yet plainly distinct from it, comes the Rev. A. Ley's East and West Heref. bramble which was named *R. velatus* Lefv. by Prof. Babington (v. *B. E. C. Reports*, 1888, 211; 1889, 254). This species is described in Genevier's *Monogr.* ed. 2, p. 97. Here it seems sufficient to say that Heref. specimens, shown me by Mr. Ley in Cowleigh Park last August, differ from *R. britannicus*, as described above, by l. rather softer and hairier, and unevenly crenate-serrate, and especially by the *longer pan.* rounded at top, *with more ascending branches*, the *much closer clothing of short hairs on rachis*, the *more conspicuously clasping sep., and the hairy germens.* The most marked feature in *R. velatus* is furnished by the long *sep. completely embracing the small fr.* In this, as in some other features, it seems rather near to the E. Schleswig *R. Jensenii* Lge., which, however, has thinner barer l. and a much more Cæsian st.

I have stated above that it now seems to me desirable to remove *R. oigocladus* (which I saw growing last summer in Dev. and Somers.) from its old position among the *Bellardiani* to one among the *Egregii* as a var. of *R. mucronatus*. I feel bound to add, though

Mo. Bot. Garden,
1895.

very regretfully, that for the present, at all events, we must apparently part with the two plants which I had placed under *R. oigocladus* as vars. *R. Briggsii* and *R. Bagnallii*, unless the former is really to be found now at Henfield, Suss. I have Mr. Bagnall's authority for saying that *R. Bagnallii* is almost certainly a thing of the past in Warw., the only county where it has been found, and there seems every reason to fear that the same is true of *R. Briggsii* as a Dev. plant. Both appear to be only anomalous forms.

IN MEMORY OF RICHARD SPRUCE.

By the death of the celebrated botanist and traveller, Richard Spruce, at the close of the past year, the botanical world has sustained a heavy and irreparable loss. Mr. Spruce fell a victim to an attack of influenza, followed by pneumonia. Born Sept. 10, 1817, at Ganthorpe, in the North Riding, he devoted the leisure time of his early life to the botany of the moors and dales of the district. His earliest writings appeared in 1841, in vol. i. of the *Phytologist*. At that time he was on the staff of the Collegiate School at York. In the following year he was elected a Fellow of the Botanical Society of Edinburgh, in whose *Transactions* in after years he published the most important of his contributions to science. His short visit to Dr. Thomas Taylor in Ireland in the same year is of interest, for to it may doubtless be traced the intense zeal with which he subsequently threw himself into the study of the *Muscineæ*. After dealing with the Mosses and Hepatics of Eskdale (*Phytologist*, i. 540–544) and Teesdale (*Ann. Mag. Nat. Hist.* 1844, 191–203, 271–283), he produced in 1845 a list of all the species that were known to occur in Yorkshire (*Phytologist*, ii. 147–157). At the same time he announced that, being in bad health, he was about to start on a botanical expedition to the Pyrenees and the South of Spain. The latter region he did not reach, but he spent a year in the Pyrenees, collecting flowering and cryptogamic plants. He described his experiences in three letters to Sir William Hooker, which were published in the *Journal of Botany* for 1846. He distributed his Pyrenean *Muscineæ* in published sets, and worked them up in a most suggestive paper of 113 pp. (*Ann. Mag. Nat. Hist.* 1849–50, and *Trans. Bot. Soc. Edinb.* 1850), which marked him out as one of the most promising bryologists of the period.

He was now on the threshold of the most important epoch of his career—his extensive travels on the continent of South America. On July 12th, 1849, he arrived at Para, and began making those admirable collections which have contributed so much to our knowledge of the rich vegetation of equatorial America. Slowly working his way up the river Amazon, he reached Santarem, where he found Dr. Alfred Russel Wallace engaged in zoological investigations.

After exploring the river Trombetas and one of its branches almost to the frontier of British Guiana, he returned to Santarem,

and towards the end of 1850 reached Manaos, at the mouth of the Rio Negro. Here he fitted out a large boat, which, while specially adapted for navigating the rapids of the Rio Negro, was well suited for the requirements of his botanical work. Provided with this moveable base of operations, he spent three years (1852–54) on the Rio Negro and the Orinoco and their tributaries, passing over to the Orinoco *via* the natural canal of the Casiquiari, and descending to the cataracts of Maipures, thus penetrating a long way into Venezuela. The rainy forests of the Uaupes, an affluent of the Rio Negro unknown previously but for Dr. Wallace's visit in 1852, yielded a rich harvest of novelties, comprising several new genera chiefly belonging to the natural order *Leguminosæ*, and a wealth of Fungi not approached elsewhere, *viz.*, 200 species. By this river Mr. Spruce reached the confines of New Granada. Returning to Manaos at the end of 1854, he took advantage of the newly established service of steamers to ascend the Amazon to Nauta, in Peru. Proceeding by canoe up the Huallaga, he made his way to the town of Tarapoto, situated at the eastern roots of the Andes. Here he stayed for two years, and was able to collect 250 species of Ferns in an area of fifty miles diameter.

In 1857 he descended to the Amazon once more, and ascended the Pastasa, an affluent from the north, as far as Canelos, in Ecuador. From here to Baños, a village at the foot of the volcano Tunguragua, was a land-journey of about a fortnight through the primeval forests of Canelos—a journey that has proved fatal to many a traveller in times gone by. For instance, Pizarro (1539) wandered in these forests for two years, and lost the majority of his army through lack of food. Mr. Spruce pushed through at the risk of starvation, but had to abandon all his goods owing to the impossibility of conveying them over the swollen torrent Topo. Fortunately he was able to recover them later on, with but little damage done beyond the conversion of the leather cases into maggots. These forests of Canelos he declared to be the richest locality on the face of the earth for cryptogams; and his perilous crossing of the Topo yielded him a unique souvenir in the extraordinary hepatic *Myriocolea irrorata*. After spending a profitable six months at Baños, he moved on to Ambato, from which place (his head-quarters for more than two years) he made excursions into the eastern and western cordilleras of the Quitensian Andes, though much hampered by the intestinal war which then pervaded Ecuador. At that time the Cinchona forests had become nearly exterminated owing to the destructive methods pursued by the natives in procuring the bark. At the end of 1859 Mr. Spruce received a commission from the India Office to collect seeds and young plants for introduction into India. How he managed to collect some 100,000 seeds and upwards of 600 young plants of *Cinchona succirubra* on the western slope of Chimborazo and to convey them to Guayaquil, and how Mr. Robert Cross transported them in safety to India, is well told in Mr. Spruce's Report to Government, published in 1861. And this practically brought Mr. Spruce's travels to an end. In broken health he remained on the Pacific coast until 1864, to his anguish

of body being added the distress caused by the loss of all his savings through the fraud of a professedly pious bank-clerk. Happily he had the consolation of receiving a pension after his return to England in the middle of 1864.

The best general account of his travels is to be found in the *Revue Bryologique* for 1886 (to which reference has to be made further on); but detailed accounts occur in plenty in Hooker's *Journal of Botany* between the years 1849 and 1857 (badly indexed under the various heads of "Spruce," "Amazon," "Botanical Objects communicated to Kew Museum," &c.), and an interesting summary will be found in this Journal for 1864, pp. 199–201. The *Journ. Geograph. Soc.* xxxi. (1861), pp. 163–184, contains a paper, "On the Mountains of Llanganati," volcanoes of the Eastern Andes not previously known. Among the MSS. which Mr. Spruce brought back were vocabularies of twenty-one Amazonian languages, and maps of three rivers surveyed for the first time.

In the intervals permitted him by his bad health he applied himself to the distribution of his collections to the principal herbaria. The flowering plants, which were worked up by Mr. Bentham, Prof. Oliver, and others, comprised 7000 species and several new genera. The Ferns were dealt with by Sir William Hooker and Mr. J. G. Baker; the Mosses by Mr. Mitten; the Lichens and Fungi by the Revs. W. A. Leighton and M. J. Berkeley respectively. After monographing the Palms (*Journ. Linn. Soc.* 1871, pp. 65–183), Mr. Spruce devoted the declining years of his life to the study of his early favourites, the Hepatics. His 'Hepatics of the Amazons and Andes,' which was published in 1884–5, and forms vol. xv. of the *Trans. Bot. Soc. Edinburgh*, is the most logical and scientific classification of the group that has been evolved, and is based entirely upon broad and constant characters that had previously been overlooked or underrated. In the prefatory note Mr. Spruce promised to issue a Supplement treating of "the physical features of the regions explored, and their connection with the vegetation,—especially the hepatic vegetation,—with critical remarks on certain of the genera and species." This promise was fulfilled by the publication of the paper referred to above—'Voyage de Richard Spruce dans l'Amérique équatoriale pendant les années 1849–64' (*Revue Bryolog.* 1886, pp. 61–79). Among the numerous other important contributions of Mr. Spruce to our literature the following deserve mention:—'On Anomoclada,' &c. (*Journ. Bot.* 1876); 'Musci præteriti' (*loc. cit.* 1880–1); 'On Marsupella' (*Rev. Bry.* 1881); 'On Cephalozia' (Malton, 1882, p. 99): 'Lejeunea Holtii' (*Journ. Bot.* 1887); 'Hepaticæ Bolivianæ' (*Mem. Torrey Bot. Club*, 1890); and a paper on the Hepatics of St. Vincent and Dominica, which is in the hands of the Linnean Society. The titles seldom convey any indication of the immense amount of information to be found embodied in the papers which they head. Mr. Spruce delighted to lead his readers on from the immediate subject to kindred matters, illustrating his arguments with copious instances, analogies, and original observations. Thus, after describing the

new Irish hepatic, *Lejeunea Holtii*, he proceeds to contrast the comparative wealth of *Lejeuneæ* (13 species, to which one—*L. Rossettiana* Massal.—was added in 1889; *Journ. Bot.* 1889, pp. 337, 353) found at Killarney with the three known to occur in the rest of Europe, and to point out their affinity with those of Tropical America; and then offers a solution of the difficult problem as to how they came to be at Killarney, and so passes on to a general consideration of the phenomena of distribution and the part played by animals as carriers of seeds and spores, quoting an anecdote told him by an Indian of the Rio Negro of the revels held by the beasts of the forest upon a clearing immediately after it had been deserted by its owners.

How much we have lost owing to his enforced cessation from active work—what mature speculations about natural phenomena, what interesting experiences and incidents of travel—must now be painfully evident to his personal friends and correspondents. His claims for honour among botanists are twofold—the soundness of his work, and the thorough carefulness with which he made his collections. As an instance of the latter it is said that he would spend the best part of the day in examining with a lens a few square feet of vegetation so as to ensure gathering perfect specimens of minute plants. In 1864 he received the degree of Doctor of Philosophy from the Imperial German Leop.-Car. Academy in recognition of the distinguished services which he had rendered to science. Two genera have been named after him—*Sprucea* Wilson (*Flora Antarctica*, I. i. 1847, p. 128), a moss; and *Sprucella* Stephani (*Engl. Bot. Jahrb.* viii. 1887, p. 92), a West African hepatic.

The last twenty-seven years of his life were passed in retirement at Coneysthorpe, near his old home; and he died on December 28th, aged seventy-six. He was buried in Terrington Churchyard on December 31st.

A. Gepp.

SHORT NOTES.

Elevation attained in Scotland by Utricularia minor and Urtica dioica.—With reference to the remarks on pp. 7 and 8, I beg to state that the small bladderwort grows freely on Rannoch Muir, near Kinghouse, Argyle (both on the eastern and western watersheds), up to 1000 ft., though usually a low-ground plant. I have seen *Urtica dioica* up to about 1700 ft., but by no means especially where man has disturbed the ground; indeed, it is often abundant, miles away from habitations, in the heart of a deer-forest.—Edward S. Marshall.

New County Records. — *Sedum rupestre* Huds. Hillsborough (= Helesborough) rocks, Ilfracombe, Devon, N., May 29th, 1893. This can be reached at low tide only, *H. Fisher.*—*Lactuca virosa* L. Caythorpe, Lincoln, S., *Miss S. C. Stow.* Specimens of both these are in the Museum at Nottingham.—H. Fisher.

North Cardiganshire Plants (p. 4). — We regret that in preparing our notes on the North Cardigan Flora we accidentally overlooked some records published by the Botanical Locality Record Club. In their Reports are two lists, and some scattered notices. Dr. H. Lewis Jones (Reports, 1879 and 1880) records 357 plants as occurring in the county; of these, 19 are not mentioned in *Topographical Botany*, ed. 2, or by the two earlier writers, Morgan and Lees. The Rev. A. Ley (Reports, 1875 and 1884–85–86) gives the names of 90 plants. By these two authorities and others the total number of species for the county is increased to 708. The following plants should have been marked by a dagger (†), and not by an asterisk (*) :—Recorded (1) by W. Whitwell (Report, 1883).—*Bidens cernua;* (2) by Dr. Jones—*Arctium minus*, *Mentha arvensis*, and *Betula alba;* (3) by Rev. A. Ley—*Brassica Rapa* v. *Briggsii*, *Raphanus Raphanistrum*, *Trifolium hybridum*, *Rubus fissus*, *Littorella lacustris*, *Sparganium simplex*, *Holcus mollis*, *Avena strigosa*. The number of our new county records is therefore 19; those of the Scientific Society of the University College of Wales are reduced to 8. We are glad to see Dr. Jones's remark on the poppies: he observed only *Papaver dubium* (*P. Lamottei* Boreau), and records it only "in hedges near the sea, scarce." Thus *Papaver* seems to be absent not only in our areas in the north part of the county, but also in inland parts of South Cardiganshire. — J. H. Burkill and J. C. Willis.

Eleocharis acicularis (*Journ. Bot.* 1893, pp. 309, 371).—The notes on the submerged form of this plant probably refer to the forma *submersa* Hj. Nilss. which is noticed by Norman (*Floræ Arcticæ Norvegiæ*, p. 43, 1893) as occurring in Nordlandia. He suggests that it may be mistaken for *Scirpus parvulus*, and thinks that the Greenland plant so named may be this form of *acicularis*. In the Fens I have traced *acicularis* from shallow water 2–4 in. deep to water 2 ft. deep, the plant gradually lengthening as the water deepened, and filling up the ditch to the exclusion of everything else, except here and there a patch of *Nuphar lutea;* but I have never seen it flower in the deep water.—Arthur Bennett.

NOTICES OF BOOKS.

Handbook of British Hepaticæ, containing descriptions and figures of the indigenous species of Marchantia, Jungermannia, Riccia, and Anthoceros. By M. C. Cooke, M.A., LL.D., A.L.S. With 7 plates and 200 woodcuts. London: W. H. Allen & Co. 1894 [Nov. 1893]. Pp. viii, 310. Price 6s.

The appearance of a new book on the British Hepatics cannot fail to arouse a feeling of excitement in the minds of all who are interested in the study of this little group of plants. The want of a good handbook has for many years been a serious obstacle in the path of many who wished to approach the subject, and to walk in

its ways. For the ways of Hepaticology are difficult and perplexing. The standard text-books are now out of date; a bewildering synonymy has arisen, owing to the numerous startling changes of nomenclature, and the vexing claims of priority of publication; the best of the more recent works are fragmentary; and the manifold additions to, and revisions of, the subject are widely scattered over periodical literature of several years. What is sadly needed is a good handbook, comprising all the native species gathered together from outlying literature, referred to their modern genera, and accurately described and figured; with the synonymy and various opinions of authors reduced to order, and the terminology simplified and rendered uniform. It should, moreover, contain a trustworthy key for facilitating the progress of the student, and withal it should be of moderate price. Such, then, being the chief features of the ideal handbook, what is the nature of the provision made by Dr. Cooke?

Dr. Cooke, who is chiefly known for his mycological researches, is a prolific author, who has addressed himself to a great variety of subjects. This is not the first time he has treated of the Hepatics. In the year 1865 he published in connection with *Science Gossip* his *Easy Guide to the Study of British Hepaticæ*—a cheap little work containing short descriptions, with illustrations, of all the species (136 in number) known at the time. In the preface to the present work he tells us that he has been reluctantly prevailed upon to expand the *Easy Guide* into a *Handbook*. He now gives us 200 species arranged in 50 genera. The most glaring faults of the earlier compilation have been removed—for instance, the *Anthocerotaceæ* have been separated from the *Marchantiaceæ;* and most of the figures condemned by Gottsche (*Hedwigia*, 1866, pp. 100–103) have been either suppressed or transferred to less unsuitable positions: thus *Diplophyllum albicans* acquires figures 98 and 100 from *Gymnanthe Wilsoni* and *Scapania irrigua* respectively. There are a few native species which Dr. Cooke has failed to include in his *Handbook*, and among these may be mentioned *Bazzania Pearsoni* Stephani (*Hedwigia*, 1893, p. 212)—the publication of which, however, may have been too late for admission into Dr. Cooke's text; *Cephalozia Jackii* Limpricht (*Revue Bryologique*, 1883, p. 91); *Fossombronia Dumortieri* and *F. cristata* of Lindberg (*Hepaticæ in Hibernia*, *Act. Soc. Sci. Fenn.* x. (1875), p. 533); *Riccia ciliata* Hoffm. and *R. minuta* (whatever that may be), recorded by Carrington in *Trans. Bot. Soc. Edinburgh*, xiii. Append. p. xxii. Further, it may be pointed out that *Pellia endiviæfolia* Lindb., being always dioicous, should be separated as a species from *P. epiphylla* Corda (*Handbook*, p. 249), which is monoicous; and that *Aneura sinuata* Dumort. is regarded as a true species by Stephani (*Hedwigia*, 1893, p. 137).

Dr. Cooke (p. 83) cannot find sufficient warrant for maintaining *Jungermannia socia* Nees as a British species; and he is probably right. As to *Jungermannia excisa* Dicks., he quotes Spruce and Carrington in evidence of the non-existence of that species in this country, but he has overlooked Lindberg's note (*Musc. Scand.* (1879),

p. 7) to the effect that Dickson's type-specimen is *J. capitata* Hook. (1813–16), and that Dickson's specific name published in 1793 takes precedence of Hooker's. But two years later Spruce pointed out (*Journ. Bot.* 1881, p. 38) that there is little doubt that Dickson's original specimen consisted of *J. bicrenata*, *J. capitata*, and a small form of *J. ventricosa*, which often occur intermixed; and that Dickson's description would fit any of the three; and that Dickson's figure is almost certainly *J. bicrenata;* and, moreover, that the older botanists rarely preserved the actual specimens which they described or figured. Let us suppress Dickson's species, and give it as an epitaph its own name—*Jungermannia excisa!*

The synonymy given by Dr. Cooke for *J. intermedia* Lindenb. (p. 186), and for *J. bicrenata* Schmid., differs from that of Lindberg (*Musc. Scand.* p. 7). The grounds for maintaining *Anthelia filum* Dumort. as a species are insufficient. *Bazzania Donniana* Cooke (p. 82) belongs to Spruce's *Anastrophyllum*—a subgenus of *Jungermannia* (*Journ. Bot.* 1876, p. 234); to this species Stephani (*Hedwigia*, 1893, p. 140) refers *J. gelida* Tayl., which occurs as a variety of *J. alpestris* Schleich. on p. 186 of Dr. Cooke's *Handbook.* The literature of *Plagiochila spinulosa* Dumort. on p. 160 may be supplemented by a reference to the remarks incidentally introduced by Mitten into his paper on Japanese Muscineæ in *Trans. Linn. Soc.* iii. (1891), p. 194.

As to Dr. Cooke's genera, those species, "with roundish entire leaves," which Spruce (*Hepat. Amaz. et Andin.* p. 506) regards as typical members of *Jungermannia*, are separated off under *Aplozia* by Dr. Cooke, *Jungermannia* itself being occupied by "the cloven-leaved species" which form Spruce's subgenus *Lophozia.* The genus *Jungermannia* reconstituted on Spruce's very logical lines would contain three subgenera—*Eujungermannia* (= *Aplozia*), *Lophozia*, and *Anastrophyllum* (referred to above). In *Eujungermannia* would be found *J. hyalina* (*Handbook*, p. 230, under *Nardia*) associated with its ally, *J. crenulata* (*loc. cit.* p. 167). *Nardia Carringtoni* (*loc. cit.* p. 224) would take its place in the same subgenus (*cf.* Spruce in *Journ. Bot.* 1876, pp. 201, 230, which reference Dr. Cooke fails to cite). *Aplozia lanceolata* (*Handbook*, p. 169) is the British representative of the proper genus *Liochlæna.* *Pleurozia cochleariformis* (*loc. cit.* p. 77) is very unhappily placed in the subtribe *Trigonantheæ;* a less unnatural position would be in the subtribe *Porelleæ*, or in a new subtribe of its own, following the latter.

It is very much to be regretted that Dr. Cooke has imported so many generic and specific descriptions from Dumortier's *Hepaticæ Europæ*, the inaccuracy of which provoked a severe review from Jack in *Botanische Zeitung*, 1877. He does indeed cite that review in the Bibliography (p. 295), but has ignored the corrections embodied in it, with the unfortunate result that his text is frequently incorrect and inconsistent, besides being of Dumortieresque brevity. Thus the elaters are constantly described as "naked." On p. 18 Dr. Cooke says that the arrangement he has adopted is based mainly upon that of the *Hepaticæ Amazonicæ et Andinæ* (1884)

of the late Dr. Richard Spruce (whose recent death is such an irreparable loss to the botanical world). How, then, is it that he describes the involucre of *Lejeunea* as "bifoliate," and the elaters as "double"? It is stated very clearly in Spruce's book that the involucre consists of two bracts and (except in *Cololejeunea*) a bracteole, and the elaters are characteristically monospirous, very rarely dispirous. Again, it is too bad to make such a high authority as Spruce responsible for the two following statements about *Frullania* (p. 22):—(1) "Branches within the axils, cauline leaves adjoining the base inwards and free." (2) "Cells of pedicel of four-strata, concentric (8 in. diameter of section, 32 in. circumference)"—a colossal pedicel forsooth! Of course (1) should read, "Branches within the axils of the cauline leaves, adjoining the base inwards and free"; and the parenthesis in (2) thus, "8 in diameter of section, 32 in circumference." Another instance of Dr. Cooke's inaccuracy will be found on p. 239, where the description of *Gymnomitrium obtusum* runs thus:—"When tufts are crowded stems erect, $\frac{1}{4}$ to $\frac{1}{2}$ inch with branches, few assurgent, to height of chief stem." This is a meaningless perversion of Pearson's description in *Journ. Bot.* 1880, p. 337 (it will be seen that Dr. Cooke needlessly duplicates this reference), which was as follows:—"When tufts are crowded stems erect, with branches few, assurgent to height of chief stem." To give more instances would be to waste space.

As to the illustrations, there are 201 woodcuts with the text, and 7 plates which are crammed with 94 figures, so crammed together, in fact, that they often overlap. In no case is the amount of magnification given. Some of the woodcuts have already been condemned by Gottsche (as was stated above), *e. g.*, fig. 19 for its incorrect lobule; fig. 36 for its impossible apex; fig. 46 for its crenulate margins and lack of stipules, the leaves of *Porella rivularis* being "quite entire"; fig. 90 for the reverse reason, the leaves of *Scapania nimbosa* being "ciliato-dentate" (but Dr. Cooke safeguards himself by putting a query to the figure); fig. 159 still retains those queer markings on the capsule produced by an undue intensification of the delicate lines of Carrington's fig. in *Trans. Bot. Soc. Edinburgh*, tab. ii. (quoted as "xi." by Dr. Cooke); fig. 43 appears to be upside down. As to the curious fig. 30 ("a facsimile of Dickson's figure") given with *Lejeunea orata*, Lindberg (*Musc. Scand.* p. 7) has supplied the explanation:—"E specimine auctoris *J. ovata* Dicks. (1793) est *J. Dicksoni* Hook. 1813–16)."

In his introduction (p. 10), Dr. Cooke says that the perianth or colesule is "sometimes inaccurately termed the calyx," and supplies copious instances of this misuse throughout the *Handbook*. He has omitted to simplify the terminologies of the authors from whom he has drawn his facts, and a marvellous jumble is the result, and grievous will be the perplexity of beginners. For in *Metzgeria* and *Aneura* calyx means involucre. In *Fegatella* it is stated, "Calyces none": yet the only species, *F. conica*, has "calyx four-toothed." And there are plenty more of such contradictions; e. g. *Trichocolea*,

Kantia, *Saccogyna*, *Acrobolbus*. Again, the leaves of the under surface of the stem are called indifferently amphigastria, stipules, leaf-stipules, leaflets, under-leaves, folioles. Under *Herberta* they are not mentioned; but the leaves are described as being "in four rows." *Anthelia* is stated to be "without stipules." And yet the heading to the subtribe *Ptilideæ*, to which both these genera belong, says (p. 65) quite plainly, "leaflets (always present) nearly of equal size, conforming" to the antical leaves.

No glossary is supplied. Nor is there any key to genera or species. The nature of the inflorescence of the species is seldom stated, despite the elaborate definitions provided on pp. 16, 17, and derived from Lindberg *via* Limpricht. Andrœcium, when it occurs, is misspelt: gynœcium occurs less frequently, but is equally misspelt. Areola and flagellum form plurals at variance with the rules of the Latin grammar. The contraction "Lind." functions indifferently for Lindenberg and Lindberg. The punctuation is often misleading; *e. g.*, p. 45, line 14, the segments of the stipules appear to be "monoicous." "Largest" is here and there ungrammatically used (*e.g.*, pp. 39, 41), where larger would be correct. An exception to the rule quoted from Carrington's *British Hepaticæ*, on p. 129, to the effect that the papillose leaves of *Scapania æquiloba* separate it from all other *Scapaniæ* will be found in *S. aspera* (p. 138). It will be noticed under *Lunularia* that no mention is made of the lunulate gemmiparous receptacle which gave rise to the name of the genus and is an important character for its identification, as *Lunularia* seldom fruits in this country.

To sum up, Dr. Cooke deserves our thanks for bringing together into one small and cheap volume so many of our native species, and for supplying so many illustrations. But it is to be regretted that he did not spend a little more time in revising the terminology and in making his references more exact, for many of them require correction. The ideal handbook has yet to be written, and, until that is done, we must do as best we can with Dr. Cooke's compilation.

A. G.

Chapters in Modern Botany. By PATRICK GEDDES. University Extension Manual. London: John Murray. 1893. 8 figs., pp. xii, 201. Price 3s. 6d.

A Manual of Cryptogamic Botany, adapted to the requirements of the Science and Art Department. By CHARLOTTE M. W. ROSS. Published by the author, 1, Banbury Street, Battersea. 1894. Pp. 77, v.

WE have bracketed these two books together for the sake of contrast. It would be difficult to find any two books with greater divergency of aim and method. Prof. Geddes always writes remarkably well, and in this book, designed to inform those who have already an elementary knowledge of Botany on a few biological questions, he may claim to have acquitted himself well of his task from both a literary and a scientific point of view. His book

deals with pitcher-plants, other insectivorous plants, movements of plants, relations of plants with each other and with animals, distribution after a mild fashion, leaves, &c. They are all subjects everybody knows something about, many of them of transitory theories, subjects about which the angry passions rise, and scientific sportsmen consequently keep an eye on them. There are always "crowns to be broke" on any of these subjects, and the last comer generally prevails. Prof. Geddes knows all these theories from day to day, and is by no means averse from having some of his own, which makes his writings all the more readable, and adds to the gaiety of the reader, as well as to his mental discipline and resources. We have derived singular pleasure from reading his book, and should like to see his lucidity of exposition and resourcefulness of illustration become a wider possession. These things will probably be brought against this book by those who think Botany cannot be scientific except it be a "remainder biscuit" in dryness. "How can a man write seriously who dances all over the subject in this fashion?" is the sort of question that will be asked. Well, of course he can—and in fact in this book he mostly does. Prof. Geddes has suffered from Mr. Grant Allen, Mr. Romanes and other gushers a good deal—we do not mean the evil companionship of their books has corrupted *him*, but merely in reputation. Many people who ought to know better classify him with Mr. Grant Allen. They have both tried to do the same sort of thing. Prof. Geddes has succeeded in interesting botanists and young students—Mr. Grant Allen and Mr. Romanes have also succeeded in making them smile. There is a large class beyond the University Extension movement who would profit by reading this book; many botanists, specialists of distinction who fill a part of the science with light, would be none the worse for reading it, and learning "how the world wags" in these interesting chapters on plant physiology.

We should like to speak gently to Miss Charlotte M. W. Ross, and our wish will prevail. It would have been comparatively easy to refrain from writing this book—there was no undue temptation. The Science and Art Department, with all its "requirements" bristling upon it, would not have perished, and the blameless young person did not assemble and cry aloud for such a guide as this to the examination ordeal of the Department. Things were going fairly well. The excellent cryptogamic part of Prof. Bower's *Practical Botany*, of which we are glad to see there is to be a reduced edition, does all that is needed.

Miss Ross has boiled down the type system to its dregs, and issued the result as a book interleaved for the happy possessor's original illustrations. For the sake of giving practical instruction, such books as Bower's and Strasburger's use a condensed method of statement as is necessary. Miss Ross has taken the defects of such a method, and made a Manual of Cryptogamic Botany on the plan—a shorthand sort of Botany. It fills one with despair. The old buttercup and daisy plan, with quotations from Eliza Cook and Mrs. Hemans, was far better. We hardly like to think

that Miss Ross or any other lady would deliberately sit down and write a "cram" book. We wish to break it gently to her—it *is* a "cram" book, and one of a bad sort. There are lots of other things we might have said of it, but Miss Ross will know that we refrain, in the spirit in which she should have desisted from writing her book—forbearance. We should like to assure her that this is not Botany, not even Cryptogamic Botany; it is facts, not always facts, but mostly so, and nothing else; and a blind relation of facts is no more interesting in Botany than the names of the patriarchs, or of the Kings and Queens of England, or the dates of battles strung together in a list is interesting in history. Miss Ross has probably been misled by her enthusiasm as a teacher into producing this book. In time, when she has learnt that one has to know a very great deal more about a subject than one places in a book about it, we hope her enthusiasm will not have left her, and that it will then be potent for good.

ARTICLES IN JOURNALS.

Annals of Botany (Dec.) — J. M. Macfarlane, 'Observations on Pitchered Insectivorous Plants' (3 plates). — F. Darwin, 'Growth of Fruit of *Cucurbita*' (2 plates).—H. Wager, 'On Nuclear Division in Hymenomycetes' (3 plates).—G. Massee, '*Trichosphæria Sacchari*' (1 plate).

Annals of Scottish Nat. Hist. (Jan.). — A. Bennett, 'Flora of E. Sutherland.' — T. D. Sadler, 'Moss-flora of Perthshire.' — J. Roy, 'Scottish *Desmidieæ*' (1 plate).—J. Bennie, 'Arctic Plants in the Old Lake Deposits of Scotland.'

Bot. Centralblatt. (No. 52). — 'Zur Nomenclatur-Frage.' — (No. 1, 1894). F. Höck, 'Zur Anwendung der statistichen Methode in der Pflanzengeographie.' — F. Kolm, 'Formaldehyd und seine Wirkungen auf Bacterien.' — (No. 2). A. W. Bennett, 'Ueber *Pringsheimia*.'

Bot. Gazette (Dec. 22). — H. L. Russell, 'Bacterial flora of Atlantic Ocean in vicinity of Woods Holt, Mass.' (1 plate).—M. A. Carleton, 'Studies in biology of *Uredineæ*' (3 plates). — A. F. Foerste, 'Rootstocks penetrating the ground vertically: Notes on *Leguminosæ*' (1 plate).

Botanical Magazine (Tokio). — (Sept. 10). R. Yatabe, *Senecio Syneilesis* Fr. & Sav. (1 plate).

Bot. Zeitung (Jan. 16).—M. Miyoshi, 'Ueber Chemotropismus der Pilze.'

Bull. Torrey Bot. Club (Dec. 26). — J. K. Small, 'Altitudinal distribution of Ferns of Appalachian Mountain System.' — T. Morong, 'Notes on *Iridaceæ*, &c.'—T. H. Kearney, 'Notes on Flora of South-eastern Kentucky.' — B. D. Halsted, 'Solandi Process of Sun-printing.'—Id., 'Heliotropism of Mallows.'

Erythea (Jan. 2). — A. Davidson, 'Californian Field Notes.'— C. Michener, 'R. & P.' — Id., 'Publication of Varieties.' — E. L. Greene, Nomenclature of *Jacksonia*.—J. M. Blockman, 'Californian Herb-Lore.'—W. L. Jepson, 'Teratological Notes.'

Gardeners' Chronicle (Dec. 30).—*Graderia subintegra* Mast., sp. n. (fig. 122). — (Jan. 20). W. B. Hemsley, 'Japanese Horticultural Literature.'— *Asplenium Guildingii* Jenman, & *Trichomanes fruticulosum* Jenm., spp. nn.

Irish Naturalist (Jan.). — R. Ll. Praeger, 'Notes on the Dublin Flora.'

Journ. de Botanique (Dec. 16).—E. Wilczek, 'Une herborisation au col de la Vanoise.' — L. Guignard, 'Localisation des principes actifs chez les Capparidées,' &c.

Midland Naturalist (Dec.).—W. H. Wilkinson, 'Lichens of Isle of Man.'

Notarisia (No. 6). — P. Pero, 'I laghi Alpini Valtellinesi—Valle del Liro (Spluga).' — E. De Wildeman, 'Reflexions sur Desmidiées.'

Nuovo Giorn. Bot. Italiano (Nuova serie: Jan. 15).—S. Sommier & E. Levier, 'Ranunculi Caucasici dichotomice dispositi.' — S. Sommier, 'Una cima vergine nelle Alpi Apuane.'—D. Matteucci & U. Martelli, 'Da Perugia al Gran Sasso d'Italia.' — R. Cobelli, 'Altre contribuzioni alla Flora di Serrada.'

Oesterr. Bot. Zeitschrift. (Jan.). — F. Stephani, 'Eine neue Lebermoss-Gattung' (*Schiffneria:* 1 plate).—R. v. Wettstein, 'Die Arten der Gattung *Euphrasia*.' — J. Lütkemüller, 'Die Poren der *Closterium*.' — J. Bornmüller, *Alkanna Haussknechtii*, sp. n. — K. Fritsch, *Licania subcordata*, sp. n. — A. v. Degan, *Senecio Wageneri*, sp. n.—H. Braun, *Rosa dumetorum* var. *Brachtii*.

BOOK-NOTES, NEWS, &c.

We have received a prospectus of "The E. S. C. A. Herbarium, or East-South-Central-African Herbarium," which certainly promises great things. It is to be "issued in series of one hundred species, one or two series monthly, at ten shillings per series," and the promoters, who, however, are not so far known to botanical fame, "hold orders from the most eminent botanists." "Subscriptions are accepted for one or more generas"; "the specimens are dried in a purposely-built evaporator, and of far better appearance than when paper-dried without the evaporator." The prospectus says:—"The E. S. C. A. Herbarium will supply immense treasures to the existing collections, to Authors whose attention is turned towards Africa's flora, and all students of Botany. The value and beauty of such a Herbarium can only be estimated and appreciated when before the scientist and student, but even those who have only a

remote knowledge of the South African flora can perceive what marvels in beauty of form and colour the Land of thousands of Ericaceaes, Irideaes, and Amaryllideaes can bring forward. The nature of the soil, moisture, and atmosphere here all help to preserve the colour of dried plants, so that the specimens look as gaudy as so many butterflies, and in shapeliness, colour, lovely forms, grace, and material interest they will surpass all other floras of the world. Not unlike in the flora of the Alps, the largest number of species are each confined to a very small locality, in a great number of instances so small that a wilful hand could with little labour and trouble root them out and make them disappear from the face of the earth. Very remarkable is the miniature flora, consisting of thousands of species not above an inch high, many of them almost microscopical; and the almost complete absence of trees."

THE *Kew Bulletin* dated "October and November, 1893," but issued in January, contains a reprint from an Indian Government paper of an account of Mr. G. A. Gammie's botanical tour in Sikkim in 1892. It is followed by an interesting letter from Sir Joseph Hooker, who states his opinion that "Sikkim, for its area, presents one of the richest, if not the richest, botanical regions on the globe. Though no more than about forty miles from east to west, and a hundred from north to south, and situated beyond the northern tropic, I believe that, when all that is known of its vegetation shall have been brought together, it will prove to be a better microcosm of the flora of the globe than any other area of equal or even of much larger dimensions. Thus, in its alpine region, the floras of the European, Siberian, Chinese, and American mountains are all richly represented, and there also are found the principal types of the steppe and desert vegetations of Tibet and Central Asia. In its temperate region European genera abound in species in greater numbers than they do further west in the Himalaya, or probably than they do further east in the same range, where different climatic features prevail; and in the same region types of Chinese, Japanese, and North American (both eastern and western) genera appear in force, which rapidly disappear in advancing toward the Western Himalaya. Lastly, in the tropical region the Malayan flora disputes precedence with those of the plains and lower hills of the Indian continent, Burma, and Ceylon, as represented by genera and species, many of which are also characteristic of tropical Africa. In short, with the exception of the prevalent types of the Australian, South African, and South American floras, there are few others that do not meet the eye of the wanderer in Sikkim."

NEWS sometimes travels slowly. *Nature* for Jan. 18 announces that "the first part is published of Dr. H. Trimen's *Handbook to the Flora of Ceylon.*" This is true, but by no means new, seeing that the work in question was issued last May!

AT the meeting of the Royal Geographical Society on Monday, Jan. 15th, Dr. J. W. Gregory gave an account of his recent exploration of Mount Kenia. Mr. Carruthers, after complimenting Dr. Gregory on the success of his arduous undertaking, gave a

brief summary of the botanical results of the expedition, which will be placed in the National Herbarium. Dr. Gregory had referred to a new tree *Senecio*, allied to *S. Johnstoni*, and Mr. Carruthers called attention to an interesting addition to the *Rhynchopetalum* group of *Lobelia*, already represented in Tropical Africa, in Abyssinia, the Cameroons, and on Kilimanjaro. We hope to publish a figure and description of Dr. Gregory's discovery in the March number of this Journal. Mr. Carruthers added:—"Dr. Gregory's plants demand a word or two in reference to the light they throw on the distribution of vegetable life in Central Africa. His plants from the coast level are pretty well known, but the less known plants of the higher elevations have a special interest, because on these isolated mountains we find a mixed vegetation, having affinities with the European and Mediterranean floras on the one side, and with the South African flora on the other. Thus among Dr. Gregory's collections there are two Alchemillas, a Cardamine, a Thalictrum, an Anagallis, and a Veronica, genera with which we are familiar in our fields. Associated with them are several southern forms, amongst which I may mention a new species of heath. In the collection made on Milanji, in Nyassa-land, by Mr. Whyte, under the direction of H. M. Commissioner, Mr. H. H. Johnston, which was worked out at the British Museum, we found two species of heath, carrying this Cape type further north in tropical Africa than was previously known; and now the species collected by Dr. Gregory on Kenia extends its distribution fifteen degrees beyond Milanji. A striking Helichrysum belongs to the same southern type; and I need only further allude to a new Disa, which connects geographically the two species from Abyssinia with the single species from Kilimanjaro and the large number of species found further south. The botanical results of the expedition will, from these illustrations, be seen to be important from the point of view of the geographical distribution of plants, while in the collection, which is, as I have said, necessarily limited, there are important additions to the Flora of the region explored."

Mr. F. Jeffrey, who has for several years assisted in the Kew Herbarium, has left Kew in order to undertake similar work in the Herbarium of the Royal Gardens, Edinburgh.

The *Index Kewensis* is made the text for an article on Nomenclature in *Nature* for Jan. 11. It is a repetition of the "Plea of Convenience" previously urged by Mr. Hemsley in the same journal, and this line of argument has already been dealt with in our remarks on Mr. Hemsley's paper (*Journ. Bot.* 1892, 53). The writer does not tell us what "circumstances of practical expediency" are to be considered as justifying the retention of a name, or who is to be the judge; and he does not seem to see that the present confusion is mainly due to the neglect in the past of the rule of priority. But those who, like ourselves, believe that the name of a plant is that under which it was first described under the genus in which it is retained, as well as those who insist on the retention of the oldest specific name, have at any rate a rule which is capable

of universal application: can the advocates of "practical expediency" say as much?

As an example of its literary style—and by no means an unfair one—we quote from the article the following sentence, which must come near being the longest on record:—"There are, unfortunately, men endowed with antiquarian zeal mated with sentiment which deems the naming of a species honour, and of a genus glory, who ferret through the pages of forgotten or unknown tracts or obscure journals, which perchance may contain a name, given by an author whose work has perhaps had no effect whatever upon the progress of the science, with which, under strict priority rules, they may supplant one custom has made part of popular language; or who rake out of correspondence (alas! that its preservation should serve such end) the history of private quarrels and jealousies of men whose names, as the roll of time has handed them down to us, carry only the attribute of scientific distinction, with the object of showing that one may have ignored the work of another, preceding it by a few days or weeks, and that consequently firmly established names must give place to those which strict priority demands." American papers, please copy!

We are glad to see that a "second edition, revised and augmented," of the *Official Guide* to the Timber Museum (No. 3) at Kew was issued in December last. The first edition appeared in 1886, and the *Guide* has long been out of print. The price has been raised from twopence to threepence, but there are 98 pages in this edition against 80 in the former. The *Guide* is well indexed, and contains a vast amount of the information which has been amassed by Mr. J. R. Jackson during his long connection with the Kew Museums. It can only be obtained at Kew Gardens.

We are sorry to learn that the *Midland Naturalist* has "failed to find sufficient support to justify its longer continuance." The December number concludes the sixteenth volume.

Mr. Henry O. Forbes has been selected by the Library Committee of the Liverpool Corporation for appointment as Director of the Liverpool Museums.

The general index to the twenty-five volumes of the *Nuovo Giornale Botanico Italiano*, issued at the end of last year, forms a fitting conclusion to the labour which Prof. Caruel has bestowed upon that periodical for a quarter of a century. Unfortunately, it is arranged only under authors' names, so that one has to know who would be likely to have written on a subject before it is possible to find any information about the subject itself.

The deaths are recorded of Prof. Robert Bentley, who died at Earl's Court on the 24th of December; Dr. John Roy, of Aberdeen; and the Rev. George Gordon, of Birnie, Forfar, who died on the 12th of December, at the age of 92 years. We hope to publish more detailed notices at a future period; meanwhile we may note that Mr. Gordon was prematurely included in the *Biographical List of British Botanists*.

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BIOGRAPHICAL INDEX

OF

BRITISH AND IRISH BOTANISTS

BY

JAMES BRITTEN, F.L.S., & G. S. BOULGER, F.L.S.

THIS INDEX, which was first published in the 'Journal of Botany,' has elicited general interest. It originated in the supposition that the want of such a reference-list, often felt by the authors, might also be shared by others; and the numerous expressions of interest and approval have fully justified the belief. Numerous additions to the information given in the Journal have been made, and some corrections. The list of names has also been considerably extended.

"The utility and general accuracy of this compilation were rendered evident in the course of its publication in the *Journal of Botany*, and the favourable impression then received is amply confirmed now that the Index appears revised and completed up to date."—*Athenæum*, Dec. 30, 1893.

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"This book has been compiled to satisfy a felt want among botanists. The names, dates, chief facts concerning, and published works of, botanists have been carefully put together."—*The Bookman*, Aug. 1893.

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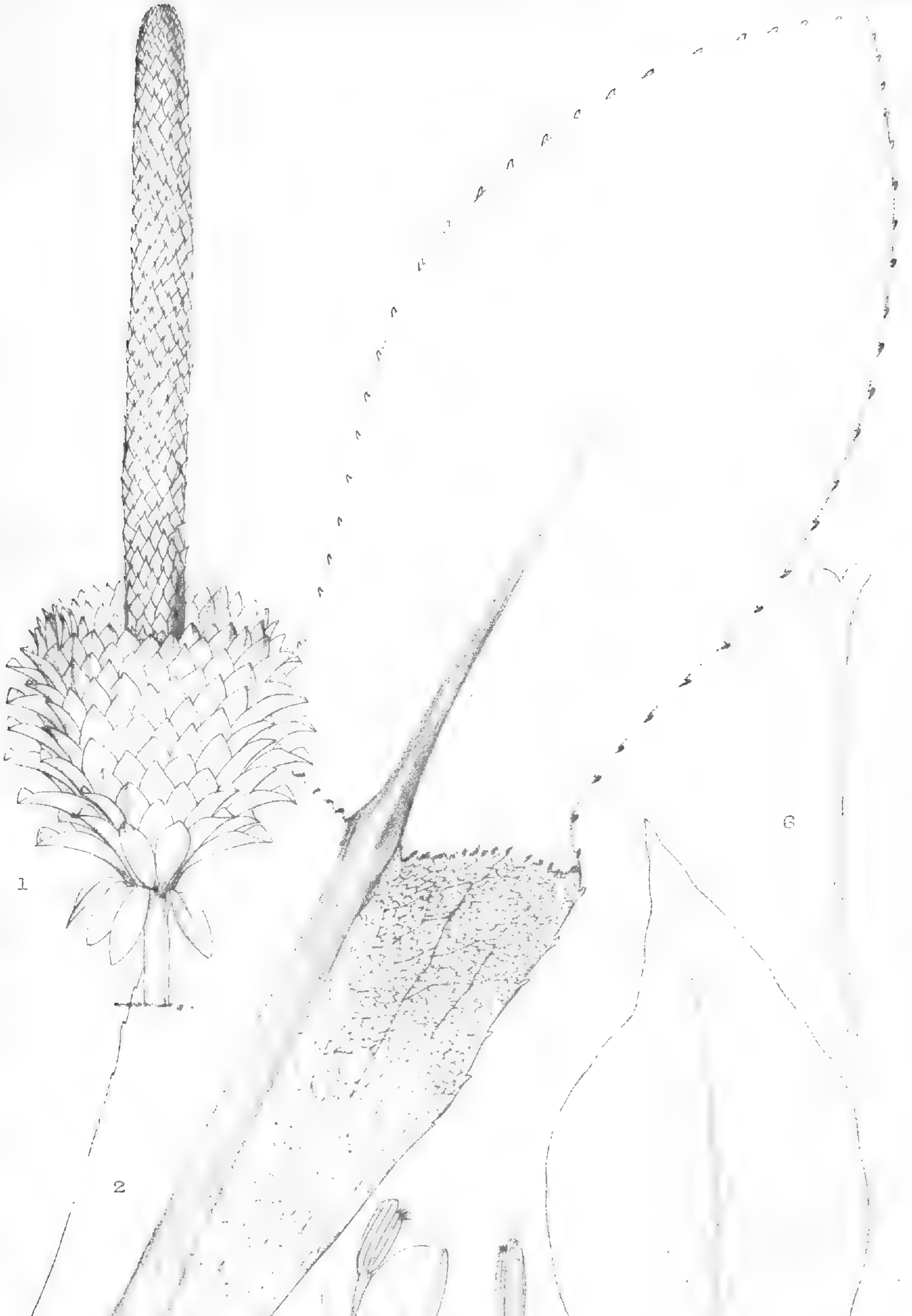

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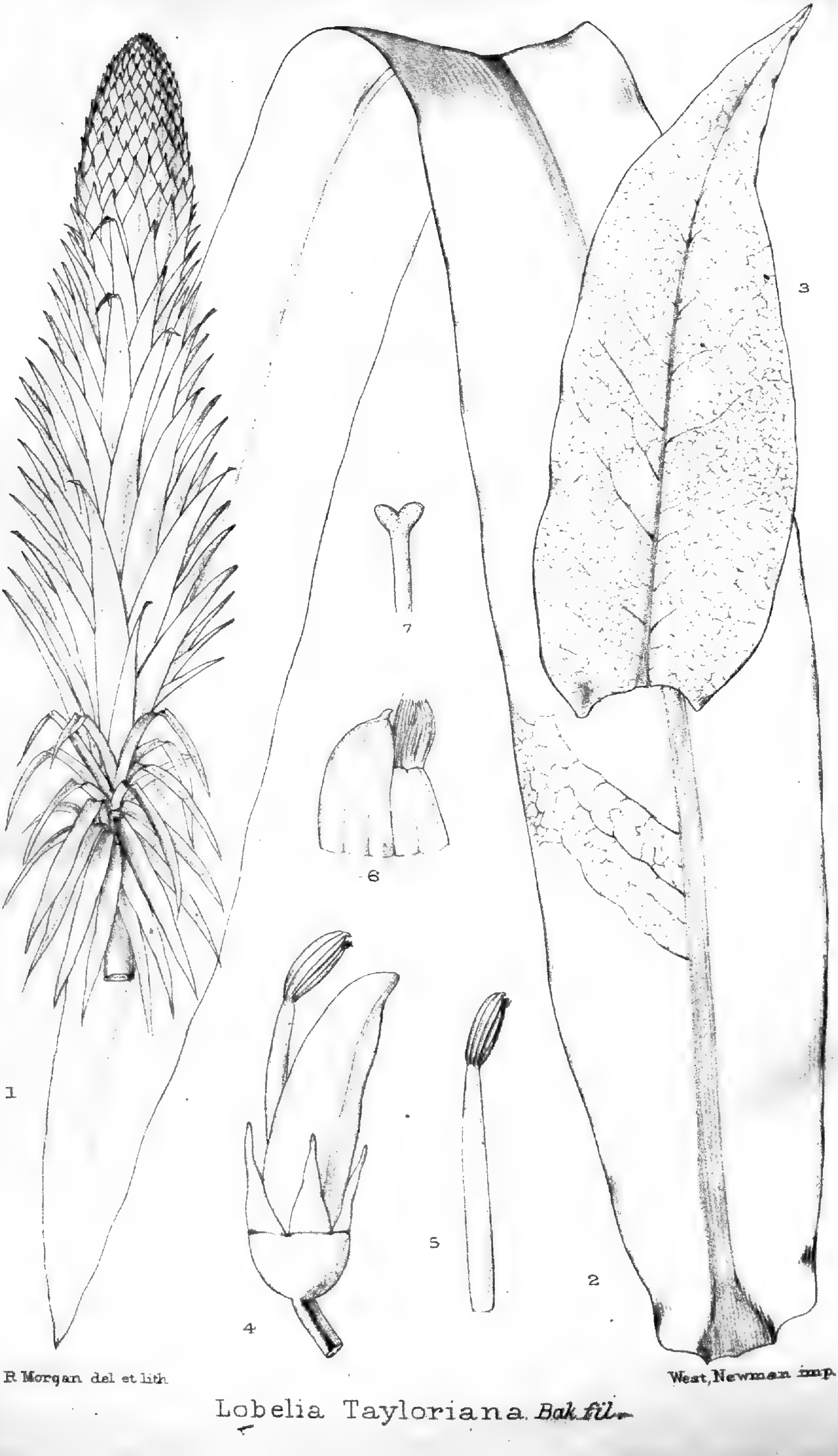

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AFRICAN SPECIES OF LOBELIA § RHYNCHOPETALUM.

By Edmund G. Baker, F.L.S.

(Plates 340, 341.)

The Tropical African species of *Lobelia* may be easily divided into two very distinct and readily distinguishable sections—the first consisting of tall, stout, erect plants terminating in dense spike-like racemes of rather large flowers, and the other of slender, erect, procumbent or trailing herbs with axillary, or loosely racemose, small flowers. The plants described in the present paper belong to the first of these sections.

Fresenius (*Flora*, 1838, p. 603) describes an Abyssinian plant under the name of *Rhynchopetalum montanum*, well known as one of the most interesting plants of the highlands of that country. A. Richard in 1847 (*Tent. Abyss.* ii. p. 9) reduced this to a section of the genus *Tupa*, a genus founded by Don (*Gen. Syst.* iii. p. 700), and consisting entirely of Chilian and Peruvian plants. The sectional characters given by Richard are, "Petala primum in unum coalita mox nisi basi distincta." Bentham and Hooker reduce both *Tupa* and *Rhynchopetalum* as sections of the genus *Lobelia*, *Tupa* consisting entirely of Chilian plants (the Peruvian being unknown to them), and *Rhynchopetalum* comprising 2 Brazilian, 3 African, 12 Indian, and 3 Oceanic plants.

The genus *Tylomium* of Presl (*Prod. Mon. Lobel.* p. 31), constituting the section *Tylomium* of *Lobelia*, according to Bentham and Hooker, and coming between the sections *Tupa* and *Rhynchopetalum*, consists of tall herbs, all of which inhabit the West Indies. Engler and Prantl (*Naturlich. Pflanzenfam.*) have a somewhat different arrangement; their section *Tylomium* includes *Tylomium*, *Rhynchopetalum*, and *Haynaldia*, this latter consisting of five Brazilian species. The section *Rhynchopetalum* is intermediate between *Tylomium* and the *Eulobeliæ*, and may be, for our purpose, characterised as follows:—Herbæ elatæ, racemo (an spico) terminali multifloro bracteato. Antheræ 3 majores vertice nudæ, 2 inferiores barbatæ vel vix barbatæ.

The African species are *Lobelia Rhynchopetalum* Hemsl., *L. Giberroa* Hemsl., *L. Deckenii* Hemsl., *L. columnaris* Hook. fil., *L. Telekei* Schwf.; and the plants here for the first time described, *L. Gregoriana* and *L. Tayloriana*. These plants form a geographical rather than a very natural section, there being considerable diversity of character between its various members. *L. Rhynchopetalum* and *L. Giberroa* forming the Richardian section *Rhynchopetalum* are closely allied, the petals ultimately splitting to the base. *L. columnaris* is unlike any of the other African species, having a narrow tubular corolla divided into narrow lobes about half-way down. *L. Deckenii*, *L. Gregoriana*, and *L. Tayloriana* are more nearly related to each other, in their floral characters, than to any others of the section, while the remaining species, *L. Telekei*, differs from the rest in the flowers, and in having very long narrow ciliate bracts.

I give first descriptions of the new species, and then some notes on those previously known.

Lobelia Gregoriana, n. sp. (Plate 340). Caule erecto crasso intus cavo in racemum vel spicam longam et simplicem et dense bracteatam producto, foliis sublyratis obovatis vel sublyratis oblongis obovatis crassis juxta basin rosulatis junioribus tomentosis adultioribus superne glabris vel fere glabris sive ad basin albo-lanatis subtus dense albo-lanato-tomentosis juxta basin subito glabris, petiolis præsertim foliorum inferiorum late alatis, bracteis ovatis acuminatis membranaceis floribus circiter duplo longioribus pubescentibus, floribus sessilibus vel subsessilibus, petalis violaceis coalitis, calycis tubo campanulato sepalis 3 anterioribus lanceolatis quam sepalis 2 posterioribus triangulari-lanceolatis longioribus, staminibus fere usque ad basin coalitis petala paullo excedentibus.

Hab. Mt. Kenia, alt. 12,500 to nearly 15,000 ft., *Dr. J. W. Gregory*, Herb. Mus. Brit.!

Stem stout, hollow, unbranched, 8–14 ft. high, terminating in a long, simple, dense, spiciform, bracteate raceme, or possibly spike, of violet flowers. Leaves in a rosette near the base, thick, sublyrate obovate, or sublyrate oblong obovate, clothed with a grey tomentum when young, when older becoming almost glabrous above, except near the base, which is lanate, and densely felted below for $\frac{3}{5}$ of their length downwards, apex acute, margin serrate, 8 in. to nearly 1 ft. long, 3–$3\frac{1}{2}$ in. broad; petiole especially of the lower leaves broadly winged. Bracts ovate, acuminate, membranous, sessile, pubescent, generally about twice the length of the flowers, 3–$3\frac{1}{2}$ in. long, $1\frac{1}{3}$ to rather more than $1\frac{3}{4}$ in. broad, towards the apex obscurely crenate. Flowers about $1\frac{1}{4}$–$1\frac{1}{2}$ in. long, resembling those of *Lobelia Deckenii*, but rather smaller. The corolla only splits on the upper side, and is not otherwise lobed. Calyx campanulate, sparsely pubescent or almost glabrous, membranous; sepals 3, longer than the other two longer anterior sepals, lanceolate, $\frac{5}{8}$ in. long; shorter posterior sepals triangular, lanceolate, $\frac{3}{8}$–$\frac{1}{2}$ in. long. Corolla about $\frac{1}{2}$ in. long; petals apparently not separating, as in *L. Rhynchopetalum*. Stamens united almost to the base, slightly exceeding the corolla; anthers about $\frac{3}{8}$ in. long; two posterior bearded. The lower half of the anthers and upper portion of the staminal column pubescent.

I have named this plant in honour of Dr. J. W. Gregory, who last summer so successfully explored Mt. Kenia.

This plant differs entirely from *L. Telekei*, which is found at a lower elevation on the same mountain. *L. Telekei* is described and figured in the Appendix to Von Höhnel's *Zum Rudolph See*, and has narrow linear bracts about ten times longer than the flowers. The nearest ally of *L. Gregoriana* is *L. Deckenii* Hemsl. (*Fl. Trop. Africa*, iii. p. 466; *Tupa Deckenii* Asch. in *Bot. Zeit.* 1869, p. 71), first collected by Baron Von der Decken on Mt. Kilimanjaro. Mr. Hemsley describes this as glabrous in all its parts, while the leaves of the plant here described are thickly felted below, and the bracts are pubescent.

Dr. Gregory states that this plant reaches a height of from

8–14 ft., the diameter of the lower part of the stem being about 2 in. The leaves are in a basal rosette a short distance from the ground; the bracts extend from the apex to the rosette of leaves, and do not vary much in shape. The flowers are of a violet colour, and are either sessile or subsessile. It grows, together with a tree *Senecio*, on the sides of the valleys, which are generally stony, at a height of from 12,500 to 13,500 ft. Some dead ones were found higher up, just below 15,000 ft. *Lobelia Telekei* grows in open peat swamps, or on the floor of the valleys.

L. Tayloriana, n. sp. (Plate 341). Caule erecto crasso tereti intus cavo in racemum longum et simplicem et dense bracteatum producto, foliis longis vel longissimis angustissime oblanceolatis vel ligulatis sessilibus membranaceis versus apicem obsolete crenatis adultioribus glaberrimis, bracteis confertis ovato-lanceolatis vel lanceolato-ellipticis glabris acutis vel acuminatis quam floribus paullo longioribus, eos autem fere celantibus gradatim deorsum longioribus in folia transeuntibus, floribus pedicellatis pedicellis ancipitibus, calycis tubo hemisphærico quam sepalis lanceolatis acutis tubo longioribus, petalis calyce fere triplo longioribus, staminibus stylo æquilongis petala paullo excedentibus basi coalitis.

Hab. Mt. Kilimanjaro, from the upper slopes above Morang as far as 10,000 ft., *Rev. W. E. Taylor*, 1888, Herb. Mus. Brit.!

Stem stout, erect, hollow, unbranched, terminating in a long, simple, dense, spiciform, conical raceme. Leaves attain a length of a little over a foot, and a breadth of $1\frac{1}{2}$–$1\frac{2}{3}$ in.; they are crowded, alternate, sessile, of a membranous or almost papery texture, narrowly oblanceolate or broadly strap-shaped, towards the apex obsoletely crenate, and are traversed by a thick fleshy midrib, when old are perfectly glabrous. Bracts vary rather in shape, according to their position on the stem, where the flowers commence to be borne (*i. e.*, they are borne 1 ft. from the summit, and from that point almost to the apex) they are ovate-lanceolate, $3\frac{1}{2}$–$4\frac{1}{2}$ in. long, lower they pass into the leaves, while higher they become shorter, so that their relative length to that of the flower varies considerably. Flowers are $1\frac{1}{2}$–$1\frac{3}{4}$ in. long, and are borne on ancipitous pedicels $\frac{1}{3}$–$\frac{1}{2}$ in. in length. The corolla only splits on the upper side, and is not otherwise lobed. Sepals lanceolate, not all quite the same length, but are all longer than the tube. Stamens slightly exceed the corolla in length, the filaments are united to the base, the two lower anthers are bearded.

This plant is named in honour of the Rev. W. E. Taylor, who has sent considerable collections of plants from East Equatorial Africa to the British Museum.

It is closely allied to *Lobelia Deckenii*, which also grows on Mt. Kilimanjaro, but it differs in several important particulars—the pedicels of the flowers are distinctly ancipitous, the sepals are longer, and the whole plant is of a very much stouter growth. The diameter of the stem $1\frac{1}{2}$ ft. from the summit is $1\frac{1}{2}$–$1\frac{3}{4}$ in.

In *L. Tayloriana* it will be noticed the bracts lengthen and pass gradually into the leaves, while in *L. Gregoriana* they differ

totally in consistence and shape from the leaves, and the difference between bracts and leaves is sharply defined.

Baron Von der Decken figures *Tupa Deckenii* in his *Reisen in Ost Africa*, taf v. Two flowers are given, 1 and 1*, and although the author does not say so, I think 1* is without doubt a flower of *Lobelia Rhynchopetalum*.

The following note by Mr. H. H. Johnston is appended to the specimen in the Kew Herbarium collected by him on Kilimanjaro:—"Corolla vivid small blue. This plant grows to a height of 8 ft. Up to the flower-head the spiky leaves point upward. From the flower-head, which is like a large teazle, the bracts point downwards, meeting the up-pointing leaves, and forming a curious *cheveux de frise;* gathered at an altitude of 12,000 ft., and seen growing up to 13,000 ft. alt."

The following is a translation of a MS. note by Schimper upon the specimens of *L. Rhynchopetalum* collected on his third journey:—"This noticeable plant grows on all the high hills of the south of Abyssinia (Semen is the most northerly point) from 11–1300 Parisian ft. Here and there it grows by the sides of the streams somewhat lower, but not below 10,000 ft. The seeds which I had sown lower down did not come up. This plant likes moory places and moderate moisture; it occurs also in the smaller alpine meadows, and will stand frost and ice. In the high regions of its habitat hail is more frequent than rain; snow falls but very seldom. . . . Between 11,500 and 12,500 ft. this plant attains its greatest size and is most abundant, and forms a kind of light wood. It is considered poisonous, a fact which I cannot support; the circumstance that the inhabitants of the Gibarra region become sick may be accounted for by the thin atmosphere. The milk is mildly astringent, and diluted with water is a good remedy in cases of ophthalmia, but of this the Abyssinians are ignorant. The woody stem is used by the highlanders for roofing, and also for fuel."

Prof. F. O. Bower (*Journ. Linn. Soc.* xx. p. 440) carefully describes the anatomy of the stem, which in some cases reaches a diameter of 5 in. He states that, "not only in internal structure, but also in external appearance, the old stem of *Rhynchopetalum* resembles that of some Cycads. This is especially true for the lower portions of the old stem, where the increase of girth has been accompanied by the formation of fissures in the outer tissues, so as to obliterate the scars of the leaves."

Lobelia Telekei Schwf. ex Engler, *Hochgebirgsflora*, p. 409 (nomen); Schwf. in Von Höhnel's *Rudolph See*, p. 861 c tab. Caule erecto crasso intus cavo in racemum longum et simplicem producto, foliis juxta basin rosulatis confertis sessilibus linearibus cuspidatis utrinque villosis, racemo dense bracteato, bracteis anguste linearibus margine ciliatis longissimis florem circiter decies superantibus, floribus breviter pedicellatis, calyce campanulato sepalis anguste lanceolatis acuminatis tubo longioribus, petalis violaceis versus apicem liberis, staminibus coalitis fere ad basin petala paullo excedentibus.

Hab. Mt. Kenia, *Von Höhnel;* in open peat swamps at the bottom of the valleys, alt. 11,400 to nearly 13,000 ft., *J. W. Gregory*!

Stem erect, hollow, stout, according to Von Höhnel 4–15 ft. high, but terminating in a long simple spike-like bracteate raceme of dark violet flowers. Leaves linear or narrow lanceolate, cuspidate, villose, arranged in a basal rosette. Bracts linear, with ciliated margins, 4–6½ in. long, about ten times longer than the flowers. Flowers shortly pedicellate, under an inch long. Calyx campanulate; sepals narrow lanceolate, acuminate, pubescent, ⅜–½ in. long, longer than the tube. The flowers and bracts are very different from those of *L. Gregoriana*. Petals dark violet, becoming free towards the apex, but not free to the base, as in *L. Rhynchopetalum*. Staminal column slightly pubescent, joined, except at the base; lower anthers bearded, 2–2½ lines long. Stigma bifid.

The long narrow ciliate bracts, about ten times longer than the flowers, clearly distinguish this species. The specimens of this plant seen by Dr. Gregory reached a height of about 8 ft., and were growing at an altitude of from 11,400 ft. to slightly under 13,000 ft. on the south-west side of the mountain.

LOBELIA COLUMNARIS Hook. fil. is very distinct from any of the other African species. It seems to have more affinity with the plants constituting the genus *Tupa* of G. Don, coming from Chili, and with *Lobelia excelsa* Leschen., a common species of the mountains of Southern India and Ceylon, which is figured in Wight, *Icones*, tabs. 1173–1174.

I append a key to the African species of this section of *Lobelia*. Their geographical distribution is of interest, as it will be seen that apparently each of the big northern ranges of mountains in Tropical Africa has its peculiar species. Two species are known from the mountains of Abyssinia, one from the Cameroons and Fernando Po, two from Mt. Kenia, and two from Kilimanjaro. This contrasts strongly with the distribution of such a plant as, for instance, *Viola abyssinica* Hochst, where we have one and the same species occurring on all the ranges. We await with interest the result of the explorations of the other high mountains in north Tropical Africa, such as Mt. Elgon and Mt. Ruwenzori.

As will be seen, characters founded on the bracts have principally been relied upon for distinguishing the species. So many differential characters exist, not only in the flowers, but also in the leaves, that either of these organs might have been used instead. The behaviour of the petals, for instance, in the species treated of, as has already been stated, is strikingly different.

⊙ Bracts ovate, lanceolate-elliptical or ovate-lanceolate.

\+ Bracts glabrous.

* Pedicel terete.

L. DECKENII Hemsl.

Hab. Mt. Kilimanjaro, *Decken, Kersten, Von Höhnel, H. H. Johnston*!

* * Pedicel ancipitous.

L. TAYLORIANA, n. sp.

Hab. Mt. Kilimanjaro, alt. about 10,000 ft., *Taylor*!

+ + Bracts pubescent.

L. GREGORIANA, n. sp.

Hab. Mt. Kenia, alt. 12,500 to nearly 15,000 ft., *Gregory*!

⊙ ⊙ Bracts linear, linear-lanceolate, or lanceolate.

† Bracts exceeding the flower.

* Bracts linear-lanceolate, about 10 times as long as the flower.

L. TELEKEI Schwf.

Hab. Mt. Kenia, alt. 9–12,000 ft., *Von Höhnel;* 11,400 to nearly 13,000 ft., *Gregory*!

* * Bracts lanceolate, about $1\frac{1}{2}$–3 times as long as the flower.

L. RHYNCHOPETALUM Hemsl.

Hab. Abyssinia. Mt. Bachit, alt. 9–13,000 ft., *Schimper*, No. 169 (1853)! No. 1263! *Petit* (1862)! Nori, *Steudner*, No. 1379! Gunna, *Schimper* (1863), No. 1554!

* * * Bracts linear, not much overtopping the flowers.

L. GIBERROA Hemsl.

Hab. Abyssinia. Mt. Aber, between the villages Addesselam and Maizacholo, alt. 8000–8300 ft., *Schimper*, No. 908!

† † Bracts not exceeding the flowers.

L. COLUMNARIS Hook. fil.

Hab. Fernando Po; Clarence Peak, *Mann*! Cameroon Mts., *Mann*, alt. 9000 ft.!

DESCRIPTION OF PLATES.

PLATE 340. LOBELIA GREGORIANA, n. sp. — Fig. 1. Whole plant, showing habit ($\frac{1}{18}$ nat. size), drawn from Dr. Gregory's description. 2. Under side of leaf, $\frac{3}{4}$ nat. size. 3. Bract, nat. size. 4. Flower, nat. size. 5. Column of stamens, showing filaments free near the base, nat. size. 6. Style and stigma, × 2.

PLATE 341. L. TAYLORIANA, n. sp. — Fig. 1. Drawing of specimen in the National Herbarium, showing habit ($\frac{1}{3}$ nat. size). 2. Leaf, nat. size. 3. Bract, nat. size. 4. Flower with ancipitous pedicel, nat. size. 5. Stamens, nat. size. 6. Portion of anthers, showing two lower ones to be bearded, enlarged. 7. Style, enlarged.

ARTEMISIA STELLERIANA BESS. IN EUROPE.

BY F. W. C. ARESCHOUG.

ACCORDING to an article in the January number of this Journal (p. 22), this interesting plant was found last summer in Ireland on the North Bull, "a sandbank which runs along the northern shore of Dublin Bay for some two miles, and is separated from the mainland by a muddy creek a quarter of a mile in width" (*l. c.*). The plant grows vigorously, it is stated, among low sandhills, in scattered patches for a distance of fully 600 yards, and in association with *Psamma arenaria*, at a point remote from any house or garden. It is assumed, as a matter of course, to be naturalized in

that locality. In two short papers (*Botaniska Notiser*, Lund, 1880, p. 137, and 1893, p. 111), where an account is given of the finds of this plant in the Scandinavian Peninsula, I have endeavoured to show the probability of its being indigenous to Europe, and of its representing a flora now becoming extinct in our part of the globe. I have therefore thought it might be of some interest to state my reasons for the above opinion, especially as these papers seem to have entirely escaped the notice of foreign botanists.

A. Stelleriana was met with on the west coast of Skåne, the most southerly province of Sweden, in 1876, but did not attract any special attention till 1880, when I visited, in company with some young botanists, the place where it grew. It occurred for a distance of about ten miles along the shore between the two coast-towns of Landskrona and Helsingborg, and in groups containing a few plants and situated several hundred or thousand feet from one another. It extended along a zone immediately above that bearing the (maritime littoral) saline flora, growing on sand and in association with *Elymus arenarius* and *Psamma arenaria*. The wide dispersion of this species along the coast of Skåne, as well as the great age which some individuals, judging by their very considerable size, must be assumed to have attained, renders it highly probable that, if this plant be a naturalized form in Skåne, its naturalization must have taken place at a time far removed from the present. For if this plant has been brought to Skåne in some casual manner, it first appeared, in all likelihood, at some solitary point, and thence spread further. But this process must have been very slow. The fruit of this plant is not furnished with any contrivance for its dispersion by the wind or its adhesion to the hair or feathers of animals. Nor does it seem credible that the fruit, clogged with earth, can have stuck between the toes of birds, and been transported in that manner, for the loose, sandy soil in which this plant lives cannot possibly adhere in such a situation. It is also quite out of the question that the fruit can have been spread by granivorous birds. The fruit has no fleshy outer envelope, and would undoubtedly be digested if swallowed by birds. Furthermore, it is highly probable that, on account of its intense odour, this plant is avoided by animals. And it has not spread at all on the coast of Skåne since it was observed in 1880, in spite of the fact that its growth was then very luxuriant.

The above circumstances are decisive evidence that this plant can but slowly extend its area, and that, if it has been introduced into Skåne in a manner impossible for us to ascertain, this must have happened very long ago. But when *A. Stelleriana* was first observed (1876), in no part of Sweden had it been cultivated, to the best of my knowledge, in the open. In the Botanical Garden of Copenhagen it was cultivated about 1865, though it soon died out; and in the gardens of North Germany it can hardly have occurred earlier than in Copenhagen. But, considering the slow rate at which *A. Stelleriana* spreads, it could not possibly have attained so wide an extension on the west coast of Skåne as it had in 1880, even if it had been transported thither immediately on its

first cultivation in Denmark or North Germany. Still more improbable does it seem, that the species in point can have been brought here, in some unknown way, from more distant parts of Europe where its cultivation is of earlier origin. I am indeed ignorant when *A. Stelleriana* was introduced into Europe; but it was first described in 1835 by Besser; and in all probability some years elapsed before its cultivation was begun in the great countries of Europe. We may also assume without hesitation that the species was not transported immediately afterwards to its station on the west coast of Skåne. Consequently, even on the supposition that it was introduced from Central or Southern Europe, the time must have been too short for the plant to have spread so greatly in Skåne as it had in 1880. It is, besides, not easy to conceive how this plant could have been conveyed such a distance, for, as I have already mentioned, it is destitute of the appliances by means of which plants in general are capable of migration. Nor is it probable that seeds or fragments of the plant can have drifted with the waves from remote countries, and been cast ashore on the coast of Skåne. Apart from the fact that such seeds or fragments would be destroyed by lengthy immersion, that part of the shore on which *A. Stelleriana* occurs is not washed—under ordinary circumstances—by the waves. Immediately above the normal watermark the shore consists of a strip quite bare of vegetation, on account of its being often under water. Above this strip lies another, on which seaweed is cast up in stormy weather, and where the saline flora grows. Next comes a zone consisting of sand mixed with shingle, and it is here that we find, together with *Psamma arenaria*, *Elymus arenarius*, &c., *A. Stelleriana*. Still more improbable is it that the plant can have come to this place among ballast, for the coast is open, and no vessels put in there. Besides, *A. Stelleriana* can hardly occur in any part of Europe at such places as vessels frequent for purposes of ballasting.

Apart from the almost inexplicable circumstance that *A. Stelleriana* should have run wild in a country where it has not been cultivated, as opposed to the fact that it has not done so in tracts where it has been cultivated for long periods, another point, its restriction to maritime stations, is a serious objection to the supposition that it has originated from gardens. Plants that are cultivated in gardens and spread thence, appear in the immediate neighbourhood of those gardens. But nowhere in the botanical literature to which I have had access, could I find any statement that this is the case with the plant under consideration. *A. Stelleriana* has subsequently been met with in two other places in Europe. In Denmark (the north of Zealand) one of my former pupils, Dr. Gunnar Andersson, found it in the summer of 1892 (*Botaniska Notiser*, 1892, p. 197), in a locality quite similar to its Scanian station, and in association with *Psamma arenaria* (and probably *Elymus arenarius*, which usually accompanies the said grass). It also grows, as I have already mentioned, in an exactly similar locality and in the same association, on the Irish coast. In North America, too, where this species occurs, both to the

south-east of Long Island along the coast at Long Reach (*Bull. Torr. Bot. Club*, vol. xv. p. 328), and on Nahant Beach, Mass., it grows on the sea-coast. Though nothing is expressly stated on this head, I believe I am not mistaken in assuming that there this plant appears in the same association as in Europe.

The significance of this is still further increased by the fact that *A. Stelleriana* lives in Kamchatka, among quite similar environments. Between the undermost leaves of some dried fragments of this plant sent me by Maximovicz from Kamchatka, I observed grains of white sand and glumes of some *Elymus* species. The plants had thus grown in sand and in association with some species of the said genus. If this plant had originated from gardens in Europe and North America, it would be almost impossible to explain how it could have passed over all the interjacent tracts, and found a direct path to localities exactly resembling those which it affects in its first home.

On the other hand, several difficulties may be raised to the assumption that *A. Stelleriana* is native to the sea-coasts of Europe and North America. That it has not been observed sooner is almost incomprehensible. This may be explained, however, in some degree by the fact that *A. Stelleriana* occurs on a littoral zone whose vegetation is comparatively uninteresting, and to which no great attention is therefore paid by botanists who visit the shore to examine the saline flora. At a distance, too, it may be mistaken by the casual observer for *A. maritima* or *Absinthium*, or even for a whitish tomentose form of *A. vulgaris*. Even on the supposition that this plant has been brought to Sweden in recent years it must have occurred, as I have tried to show, for some time on the Scanian coast, although not until 1880 did it attract so much notice that its species was determined. The fact is that it was collected in 1876 by two young botanists, who paid no attention to it, however, until it had been ascertained that *A. Stelleriana* grew on the west coast of Skåne. That this plant appears at isolated points, widely separated from each other, has evidently contributed to the long period during which it remained unobserved. Besides, its flowering season occurs rather late in autumn. On the 22nd September, 1880, it was still in full-flower when I visited, during a botanical excursion, its station, already discovered by a school-boy; and botanical excursions for the collection of phanerogamous plants are seldom undertaken in Sweden so late in the year. It is also far from probable that every spot within an extensive area can have been visited by an experienced botanist. In this manner we may account for the fact that marked species of plants may still be discovered in well-examined tracts. In Skåne, for example, which is certainly the most thoroughly examined province in Sweden from the botanist's point of view, there have quite recently been observed, among many others, *Lathyrus sphæricus*, *Hypericum pulchrum*, *Cirsium rivulare*, and *Potentilla Fragariastrum;* and on the little island of Bornholm was discovered, about twenty years ago, the extremely well-marked *Anemone cærulescens* Lge., which was in several localities very luxuriant.

It may be further remarked that the Scanian and Danish form differs in several respects from that which grows in Kamchatka,—to judge, at least, by the fragments that I have seen from the last-mentioned country,—and comes nearer the form cultivated in Europe. Perhaps this may depend on the great variability of the species; witness the fact that the form represented in *Refugium Botanicum*, t. 203, which is probably taken from cultivated specimens, differs not only from the Scanian form, but also from the Kamchatkan. On the other hand, should it appear, on a more thorough comparison than I have been able to institute, that the Scanian form constantly differs from the Kamchatkan and resembles the cultivated form, this is no decisive proof that the Scanian form derives its origin from the latter. For the divergencies that may exist between the cultivated and the Kamchatkan form must be assumed to have arisen under the influence of the climatic relations that obtain in Europe; and these climatic relations, it must again be assumed, would have had the same effect on the species had it been wild in Europe.

Finally, the very great distance between Kamchatka and the west coast of Europe must quite naturally cause the botanist great hesitation in regarding this plant as original, *i. e.*, diffused without the direct or indirect agency of man to the coasts of Europe. On this head it should be borne in mind, however, that several other plants, even species of the genus *Artemisia*, have an almost equally extensive and a greatly broken range. Thus *A. laciniata* Willd, occurs in several parts of the island of Oland, situated in the Baltic and well known for its highly interesting flora, and in a few localities in Central Germany, whence there is a gap in its range right to the Altai Mountains, from which locality it is distributed all the way to Amur. The extension of *A. rupestris* L. is similar, though not so dismembered. Furthermore, it is hardly improbable that *A. Stelleriana* may grow, though its stations are unknown, in several places on the sandy banks of Siberian and North American rivers. It has escaped observation for a period at all events not very limited on the west coast of Skåne, and this can happen much more readily within regions so extensive and, comparatively speaking, so desolate.

I am inclined to believe that *A. Stelleriana* belongs to that element of European vegetation which I have termed (in *Acta Universitatis Lundensis*, 1866) the Altai flora, and which is almost identical with the steppe flora of later writers. This flora has a circumpolar range, without being arctic. The representatives of the Altai flora are now restricted in Europe to widely isolated localities. I have endeavoured to show (*l.c.*) that, after the Glacial Period, this flora immigrated from Central Asia into Europe in the track of the Arctic flora, and that it was afterwards supplanted more and more in Europe by more southern elements, belonging to the Caucasian, Mediterranean, and Atlantic flora. One of the most typical representatives of the Altai flora is *Potentilla fruticosa* L., whose area extends from Canada and Newfoundland, right across the northern tracts of North America to the Behring

Islands, Kamchatka, the whole of Siberia to Western Russia (Esthonia, Livonia, Courland), Oland, the north of England, Ireland, and the Pyrenees (?). Roughly speaking, *A. Stelleriana* occupies the same area, though its range is much more interrupted. The nearest relatives of the latter species also grow in Eastern Siberia and Kamchatka. It is a remarkable circumstance that *A. maritima* L., which belongs to the Atlantic flora, and which is not rare on other parts of the west coast of Skåne, seems to be entirely wanting on that portion of the coast where *A. Stelleriana* grows. It would undeniably be of interest to ascertain how far this applies to the other European stations of the latter species. Should the observation hold good there as well, it might be possible that *A. maritima*, a later immigrant, has gradually supplanted *A. Stelleriana* in the localities more congenial to the former.

Unless some new facts be brought to light, rendering the diffusion of this species from gardens more probable than is now the case, *A. Stelleriana* should thus be regarded as native to Europe.

SOME IRISH RUBI.

By R. Lloyd Praeger, B.A., M.R.I.A.

Our Irish brambles, and their distribution, are almost unknown. The list of Rubi in *Cybele Hibernica* is a mere skeleton, and consists almost solely of the plants collected by Prof. Babington and Dr. Moore. The new edition will no doubt furnish a much more complete account of the distribution of the group in Ireland, but its publication, long delayed, is still in the future. At the present time, the only lists which we have, which can be considered to give anything like a fairly complete enumeration of the Rubi of the localities to which they refer, are those of Stewart and Corry's *Flora of the North-east of Ireland*, one or two of Mr. Stewart's reports to the Royal Irish Academy on the floras of some scattered districts in Ireland, and the writer's "Flora of Armagh," published in the *Irish Naturalist* for the past year.

The subjoined list is the result of a few days' Rubus-hunting during the past season within a forty-mile radius of Dublin, in the counties of Dublin, Meath, Wicklow, Kildare, Queen's County, and King's County. Of these, the first two belong to District 5 of *Cybele Hibernica*, the third to District 4, the fourth and fifth to District 3, and the sixth to District 7. From none of the counties mentioned has more than an odd bramble been hitherto recorded—some half-a-dozen from Wicklow, and two or three from Dublin and Meath, appear indeed to be the sum total. While the present list cannot be taken as more than a first contribution to a knowledge of the Rubi of these districts, it will at least help towards the filling up a conspicuous gap in Irish botany. The determinations have all been made by the Rev. W. Moyle Rogers, to whom my very best thanks are due; and the arrangement of species is that

adopted in his "Key to British Rubi," published in this Journal for 1892–3.

Rubus rhamnifolius W. & N. Clontarf and Balbriggan, Co. Dublin; Mornington, Co. Meath.

R. nemoralis P. J. Muell., var. *R. pulcherrimus* Neum. Lough Dan, Co. Wicklow; Glenasmole, 800–1000 ft., and Balbriggan, Co. Dublin; Mornington, Co. Meath.

R. rusticanus Merc. Howth, Balbriggan, and Foxrock, Co. Dublin. Specimens from these stations only were seen by Mr. Rogers, but the species is more or less abundant in all the counties dealt with.

R. silvaticus W. & N. Lough Dan, Co. Wicklow; Howth, Co. Dublin.

R. macrophyllus W. & N. Maryborough, Queen's Co.: Luggela, Co. Wicklow; Howth, Co. Dublin; near Portarlington, King's Co. —Var. *R. Schlechtendalii* (Weihe). Kelly's Glen ("longer panicle than usual") and Balbriggan, Co. Dublin. — Var. *R. amplificatus* Lees. Enniskerry, Co. Wicklow.

R. pyramidalis Kalt. Glendalough, Co. Wicklow ("good"); Monasterevan, Co. Kildare ("hardly typical"); Carrickmines, Kelly's Glen, Glenasmole (800–1000 ft.), and base of Three Rock Mountain (*forma eglandulosa*), Co. Dublin.

R. leucostachys Schleich. Maryborough and Portarlington, Queen's Co.; Enniskerry, Co. Wicklow; Monasterevan, Co. Kildare; Kelly's Glen, Co. Dublin ("a remarkable variety"); near Portarlington, King's Co. Apparently common, and widely distributed.

R. mucronatus Blox. Howth and Foxrock, Co. Dublin.

R. echinatus Lindl. Balbriggan, Co. Dublin. Not hitherto recorded from Ireland, so far as I am aware.

R. scaber W. & N. Glendalough, Co. Wicklow; Clontarf, Co. Dublin ("var. with nearly glabrous stem"); Mornington, Co. Meath ("var.").

R. fuscus W. & N. Howth and Balbriggan, Co. Dublin. Not hitherto recorded from Ireland.

R. rosaceus W. & N., var. *R. hystrix* (W. & N.). Base of Three-Rock Mountain, and Carrickmines, Co. Dublin.

R. viridis Kalt. Altadore Glen, Co. Wicklow. Not previously recorded from Ireland.

R. dumetorum W. & N. Monasterevan, Co. Kildare ("form near *R. diversifolius*"); near Portarlington, King's Co. ("form between *ferox* and *diversifolius*"). — Var. *R. diversifolius* (Lindl.). Monasterevan, Co. Kildare. — Var. *R. scabrosus* (P. J. Muell). Raheny, Co. Dublin. This form of *dumetorum* alone is previously on record from Ireland.

R. corylifolius Sm. Maryborough, Queen's Co.; Enniskerry, Co. Wicklow ("weak form"); Monasterevan, Co. Kildare ("aggregate"); of another Monasterevan specimen Mr. Rogers writes, "form with exceptionally prickly and glandular panicle"; Balbriggan ("aggregate"), Howth Junction ("aggregate"), Raheny

("very weak"), and Carrickmines, Co. Dublin; near Portarlington, King's Co. (both aggregate and segregate forms).—Var. *R. sublustris* (Lees). Maryborough, Queen's Co.; Howth, Raheny, and Carrickmines, Co. Dublin; near Portarlington, King's Co.; of a second Portarlington specimen Mr. Rogers writes, "panicle-prickles very exceptionally strong." — Var. *conjungens* Bab. Maryborough, Queen's Co.; Howth Junction and Foxrock, Co. Dublin.

R. corylifolius × *rusticanus*. Malahide, Co. Dublin.

R. Balfourianus Blox. Howth and Balbriggan, Co. Dublin.

R. cæsius L. Near Portarlington, Queen's Co.

The above records will tabulate out into their respective districts as follows; the small figure is used when the species has been previously recorded from the district in question:—

	Districts.			
R. rhamnifolius	–	–	5	–
nemoralis *v.* pulcherrimus	–	4	5	–
rusticanus	3	4	5	7
silvaticus	–	4	5	–
macrophyllus	3	4	5	7
Schlechtendalii	–	–	5	–
amplificatus	–	4	–	–
pyramidalis	–	4	5	–
leucostachys	3	4	5	7
mucronatus	–	–	5	–
echinatus	–	–	5	–
scaber	–	4	5	–
fuscus	–	–	5	–
rosaceus *v.* hystrix	–	–	5	–
viridis	–	4	–	–
dumetorum	–	–	5	7
diversifolius	–	–	5	–
scabrosus	–	–	5	–
corylifolius	3	4	5	7
sublustris	3	–	5	7
conjungens	3	–	5	–
corylifolius × rusticanus	–	–	5	–
Balfourianus	–	–	5	–
cæsius	3	–	–	–

A number of other forms, some of which Mr. Rogers considers of much interest, were collected, but these he will not undertake to name at present. Some of them will be submitted to Dr. Focke, and I hope to supplement this paper by a further note when his remarks are received; of others, a more complete series is required for positive determination; and others again will probably have to be studied in their native habitat before they can be definitely assigned to their proper place.

SOME NEW ZEALAND MOSSES AND HEPATICÆ.

By Henry Boswell, M.A.

Many able and industrious collectors have contributed to our knowledge of the charming cryptogamic flora of New Zealand, and it has been somewhat thoroughly investigated and described; but it will always remain to the bryologist one of the most fascinating in the world and continue to hold out hopes of novelty.

Mr. Cosmo Melvill has lately forwarded me a very interesting parcel for examination, being the cryptogamic portion of the rich and beautiful collection made in the neighbourhood of Nelson, Greymouth, and the Paparoa range of hills, by Mr. R. Helms, sent to England in consequence of his lamented death. These localities are situated in what is now called the South Island, a phrase to be understood to signify what was formerly, and when Sir J. D. Hooker's *Handbook of the New Zealand Flora* was published, called the Middle Island; the division of that time being about as unequal as if Britain were said to consist of three sections, Scotland, England, and the Isle of Wight; and it certainly seems an improvement to have a North and South Island for the main divisions of the country, while its little southern appendage will be called by its other name of Stewart Island. In this present South Island is situate the spot made classic by its frequent mention in the *Musci Exotici* of Sir W. J. Hooker, where "In sinu *Dusky Bay* dicto" repeatedly occurs, as the locality of rare and beautiful species. This work is quoted in numerous instances throughout the *Handbook*, and its excellent figures, both of Mosses and Hepaticæ, will always be found of great use to the student, and in the following enumeration the *Handbook* is constantly referred to. The Cryptogams formed but a small portion of the collection made by Mr. Helms, consisting as it does of some 2000 sheets of admirably preserved phanerogamic plants, now in the possession of Mr. Melvill; but with these the present article has nothing to do, though their excellent condition demands a passing word.

The method of arrangement here adopted is generally that followed in the *Handbook of the New Zealand Flora* of Sir J. D. Hooker, and the nomenclature used for the most part the same. This appeared likely to be on the whole the most convenient and acceptable plan in the eyes of students, who will probably have been accustomed to the use of that manual.* In the few cases where a newer name has been taken as being manifestly better, the

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* It may be well to take the present opportunity to call attention to the accidental omission of a species in the *Handbook*, which is the more remarkable as the author was its original finder, many years ago. It is this:—*Campylopus holomitrion* H. f. & W. in Lond. Journ. Bot. 1844. (*Dicranum* C. Mull., Synops. Musc. vol. i. p. 389, 1850). "Ad Insel Bay, Novæ Zelandiæ, J. Hooker." It is a handsome, tall, and rather slender moss, its leaves from a broad base capillary-elongate, and when old acquiring the golden yellow tint so frequent in the genus. I have fertile specimens, gathered a few years ago in the neighbourhood of the hot springs of Taupo.

synonyms are given. Of these *Hypnodendron* is an example, the old *Isothecium* being incongruous and inapplicable, and containing as formerly used a number of very heterogenous species.

As to the correctness of the determinations, no name has been applied until after due examination under the microscope, sometimes once or more repeated, though the majority of the species were familiar and easily recognised; some few, on the other hand, were mere scraps and very trying, e.g., *Trichostomum lingulatum;* and two others, of which more anon, offered peculiar difficulties.

Musci.

Sphagnum cuspidatum Ehrh.—*S. antarcticum* Mitt.—*S. cymbifolium* Dill.—*S. Novo-Zelandicum* Mitt.

Dicnemon calycinum Wils. & Hook. (*Leucodon calycinus* Hook. Mus. Exot.).

Fissidens dealbatus Hook. f. & Wils.

Dicranella Schreberi Hedw.

Dicranum trichophorum Hornsch.—*D. dicarpon* Hornsch.—*D. robustum* H. f. & W.—*D. Billardieri* Brid.—*D. Menziesii* Tayl.

Campylopus introflexus Hedw.—New Zealand specimens of this protean species seem less abundantly fertile than those from Tasmania, or collectors are less fortunate.—*C. appressifolius* Mitt. (*C. clavatus*, Flor. N. Z. (not Brown, nor Handbk.)).—*C. clavatus* Brown.—*C. bicolor* Hornsch.

Leucobryum candidum Hampe.

Holomitrium perichætiale Brid. (*Symblepharis* Wils. in Fl. N. Z.; *Trichostomum*, Hook. Musc. Exot. t. 73).

Ceratodon purpureus Brid.

Trichostomum lingulatum H. f. & W.

Tortula princeps De Not. (= *T. antarctica* Hampe).—*T.* (*Barbula*) *calycina* Schwaeg.

Streptopogon mnioides Schwaeg.—Another specimen grown with *Macromitrium gracile.*

Racomitrium ptychophyllum Mitt. — *R. pruinosum* C. Mull. Scarcely distinct from *R. lanuginosum*, yet its appearance is remarkable.

Macromitrium longirostre Schwg.—*M. longipes* Schwg.—*M. ligulare* Mitt. A rather doubtful morsel.—*M. gracile* Schwg. Morsels, mixed with *Streptopogon.*—*M. recurvifolium* Brid.—*M. microstomum* Schwg. Grown with *Sendtnera.*—*M. erosulum* Mitt.—*M. prorepens* Schwg.

Zygodon obtusifolius Hook. Musc. Exot. Mingled with *Metzgeria.*—*Z. intermedius* Bruch. & Schimp.—*Z. Brownii* Schwg.—*Leptostomum gracile* Brown (*Gymnostomum* Hook. Musc. Exot.).

Leptotheca Gaudichaudii Schwg. (*Aulacomnion* J. D. Hook. Hndbk.).

Bryum nutans Schreb. A doubtful scrap. — *B. leptothecium* Tayl. Barren specimen, and hence doubtful.—*B. rufescens* H. f. & W.—*B. blandum* H. f. & W.—*B. tenuifolium* H. f. & W.—*B. curvicollum* Mitt.—*B. pachytheca* C. Mull. Synops. vol. i. p. 307.

Mnium rostratum Schwg.—*M. rhynchophorum* Hook. & Harv.

Rhizogonium bifarium Schwg. (*Hypnum* Hook. Mus. Exot.).

Bartramia papillata H. f. & W. Unsatisfactory scraps.—*B.* (*Philonotis*) *remotifolia* H. f. & W.—*B. tenuis* Tayl.—*B.* (*Breutelia*) *pendula* Hook. Mus. Exot.

Cryptopodium bartramioides Brid. (*Bryum* Hook. Mus. Exot. tab. 21; *Rhizogonium Helmsii* C. Mull.). I cannot see wherein this moss in any way resembles *Rhizogonium*.

Funaria calvescens Schwg.

Eremodon octoblepharis H. f. & W., Flor. Nov. Zel. (*Splachnum* Hook. Mus. Exot.).

Atrichum angustatum Brid. (*Polytrichum* Hook. M. Exot.).

Polytrichadelphus magellanicus C. M. (*Polytrichum* Linn.).—*Polytrichum tortile* Swartz.— *P. commune* and *juniperinum* (mingled).

Dawsonia superba Grev.

Cryphæa dilatata H. f. & W.

Pilotrichella mollis C. Mull. (*Leskea* Hedw.; *Meteorium* Hook. Handbook).

Papillaria cuspidifera C. Mull. (*Trachypus* Mitt.; *Meteorium* Hook. Handbook). — Var. *cerina* (Flor. Tasm.). Out of this variable and wide-spread species, which is found in India and Ceylon, have been constructed several new species, but apparently upon very slender distinctions.—*P. flexicaulis* (*Trachypus* Mitt.; *Meteorium flexicaule* Hook. f. & W.).

Neckera pennata Hedw. (*N. hymenodonta* C. Mull.).

Trachyloma planifolium (*Neckera* Hook.; *Neckera* Hook. Musc. Exot.; *N. Trachyloma* C. Mull. Synops. Muscorum).

Thuidium furfurosum (*Hypn.*) H. f. & W.—Specimens poor and barren, hence it is difficult to say much with certainty. The *H. unguiculatum* and *H. Stuartii* of Flor. Tasman. seem to have little to distinguish them.— *T. sparsum* Hook. f. & Wils. *Hypnum*.

Camptochæte Arbuscula C. Mull. (*Hypnum* Hook. Mus. Exot. t. 112; *Isothecium* Brid. Bryol. Univ.; Flor. Nov. Zel.; Flor. Tasm.).—*C. deflexa* (*Hypnum*) Wils. (*Hypnum deflexum* C. Mull. Synops. Musc.; *Stereodon deflexus* Mitt.).

Cœlidium cochlearifolium (*Hypnum*) Schwg. (*Cœlidium* Reichardt. *Hyp. flexile* Hook. Mus. Exot. non Swartz, whose plant is a *Pilotrichella* (*Meteorium*)).

Echinodium hispidum (H. f. & W.) Juratz. (*Hypnum* Hook. Handbk.; *Leskea hispida* Mitt. in Journ. Linn. Soc.).

Brachythecium rutabulum (*Hypn.*) Linn.

Eurhynchium muriculatum (*Hypn.*) H. f. & W.

Rhynchostegium elusum (*Hypnum*) Mitt. (*Hypnum* Hook. Handbook).—*R. tenuifolium* (*Hypnum*) Hedw. (*H. confertum* Flora Novæ Z. (non Hedw.)).

Raphidostegium crassiusculum (*Hypn.*) Brid.; Schwægr. (*H. contiguum* H. f. & W. in Fl. Tasm.—*R. amœnum* (*Hypnum*) Hedw. (*Sematophyllum* Mitt. Musci. Austr. Amer. *Isothecium* Brid. Bryol. Univ.)).

Hypnum aduncum Hedw.; Schimp. Bryol. Europ. Suppl. (*H. Kneiffii* Bryol. Europ.; Wils. Bry. Brit.; Hook. Handb.).—*H. fluitans* Linn.; Hedw.—*H. cupressiforme* Linn.—*H. chrysogaster* C.

Mull. Synop. ii. 295. (*H. patale* Hook. & Wils. Flor. Nov. Z.; Flor. Tasman.).

Ptychomnion aciculare (*Hypn.*) Brid. (*H. giganteum* Menzies, MS. e specim. auctoris).

Hypnodendron comosum (*Hypnum*) La Bill. (*Isothecium* Brid. Bryol. Univ.; Hook. f. & Wils.); *Mniodendron* Lindb.).—*H. comatum* (*Hypnum*) C. Mull. Synops. (*Isothecium Colensoi* Hook. & Wils. Flor. Tasm.; *I. comatum* Hook. f. Handbook).—*H. spininervium* (*Hypnum*) Hook. Mus. Exot. tab. 29. (*Isothecium* Flor. Nov. Z.; Hook. f. Handbook).—*H. marginatum* (*Hypnum*) Hook. & Wils.—*H. Menziesii* (*Hypnum*) Hook. Mus. Exot. (*Isothecium* H. f. & W. Flor. Nov. Z.; Hook. Handbook; *Sciadocladus* Lindberg).—*H. Kerrii* (*Trachyloma*) Mitt. (*Isothecium* Hook. Handbook; *Sciadocladus* Lindberg).

Mniadelphus rotundifolius H. f. & W. (*Hookeria;* Flor. N.Z. No. 207 is with, or upon, *Bartramia tenuis*).—*M. microcarpus* (*Hookeria*) H. f. & W. (*Hypnum microcarpum* Hedw.; *Pterygophyllum* Jæger).

Pterygophyllum quadrifarium Schwaeg. (*Hookeria* Schwaeg.; Brid. Bryol. Univ.).

Eriopus cristatus (*Leskea*) Hedw. (*Hookeria cristata* Arnott; C. Mull. Synops.).

Cyathophorum pennatum Brid. (*Hookeria pennata* Hook. Mus. Exot. t. 163).

Hypopterygium filiculæforme Brid. (*Leskea filiculæformis* Hedw.). —*H. discolor* Mitt. in Hook. Handbook.—*H. Novæ Zelandiæ* C. Mull. (*H. Smithianum* H. & W. Flor. Nov. Zel.) This species seems very abundant and fine in Tasmania,— *H. oceanicum* Mitt. in Hook. Handbook. Intermixed with *Mniadelphus rotundifolius*.—*H. tamarisci* Brid.; Hook. Handb. (*Leskea tamariscina* Hedw.; *H. commutatum* C. Mull. ?). — *H. concinnum* Brid. Hook. Handb. (*Leskea concinna* Hook. Mus. Exot.; *Lopidium* H. f. & Wils. Fl. N.Z.).— *H. pallens* Jæger. (*Lopidium* H. f. & W.; *H. struthiopteris* Mitt.; H. f. Handb.).

Racopilum strumiferum C. Mull. (*R. australe* H. & W. Flora N.Z.).—*R. robustum* H. f. & Wils, Flora N.Z.

There are two mosses in the collection that present very remarkable characteristics and are deserving of a little further notice than mere enumeration.

Dicranum Billardieri var. enervosum (var. nov.).—This is a singular sport, or freak of nature. Nothing in the general appearance of the moss seemed to indicate anything more than a somewhat shortish state of the ordinary *B. Billardieri*, a species which appears to occupy in New Zealand and Tasmania the place filled in Europe and North America by *D. scoparium*, though perhaps less variable than that well-known and abundant species. But the puzzling circumstance in the present case was that on examination several stems in succession were found to bear leaves without any trace of nerve or midrib, though otherwise their structure was as usual in *Dicranum*. No fructification is present, and the suggestion followed that here might be a species of *Eucamptodon* for the first

time in New Zealand. But this seemed unlikely, and further investigation was advisable, and the result was the finding that some of the leaves were possessed of a thin half-length nerve, while in others it was more developed, till a series was obtained leading up to the ordinary *D. Billardieri*, of which in fact the present plant appears to be nothing more than a slight variety, in some of whose leaves, from some cause not readily to be explained, the usual nerve has been wholly or partially undeveloped.

The other is a much more difficult riddle to solve. It is a barren tuft of some thirty or forty stems, growing together in a *Bryum*-like manner, with foliage of a light greyish green colour, and densely matted below with copious brown radicles; the leaves are imbricated, appressed and slightly contorted in the dry state, oval-oblong in form, very obtuse at the apex and strongly recurved in the margins; the midrib is strong, broad at base, gradually narrowing upwards and excurrent into a whitish hyaline hair-point. The lower cells are large oblong-rectangular, those above irregularly hexagonal, each containing a large single granule. These bodies are the most curious feature of the moss, and totally unlike anything found in any other known to me by specimen or description. The general aspect of the present tuft reminds one of *Tortula*, of *Bryum*, *Funaria*, and others, but the more closely it is examined the less the resemblance; the singular leaf structure differs from all of them, and it is even impossible to say to what it is most nearly related; perhaps the last named. There is neither flower nor fruit, and in their absence the difficulty is of course increased, while the regretted death of the collector leaves little hope of obtaining a further supply very soon.

For the present the following name and description may serve to keep him in memory, and to distinguish his remarkable find. Some day we may perhaps obtain more light on this mysterious stranger.

Helmsia collina.—Cæspites condensati circulares, superne subcani vel glauco-virides, inferne radiculis atro-fuscis vel ferrugineis intertexti. Folia dense imbricata, sicca appressa ac leniter contorta, ovali-oblonga, obtusissima, marginibus valde recurvata; costa valida, basi lata, superne sensim angustata, in pilum hyalinum albidum contortum excurrente; reti magno laxo, inferne rectangulari-oblongo, hyalino, inani; superne hexagono, granulas magnas, angulares, polymorphas continente.

Paparoa Ranges, New Zealand. Legit R. Helms circa 1888; misit T. Kirk, 1893.

Hepaticæ.

Jungermannia flexicaulis Nees. Flora N. Zel. ii. 128! Handb. 504.

Plagiochila pleurota Hook. f. & Tayl.; Flora Antarct. 149; Handb. 505.—*P. circinalis* Lehm.; Flora Antarct. i. 348; Handb. 504.—*P. Stephensoniana* Mitt. Flora Nov. Zel. ii. 133; Handb. 505.—*P. gigantea* Lindenb. Flora N.Z. ii. 133; Handb. 505.—*P. ramosissima* Lindenb.; Flora N.Z. ii. 133; Handb. 505.—*P. Arbuscula* L. & L. Mingled with *Dicran. Billardieri*.—*P. microdictyon* Mitt.

Flor. Nov. Zel. Scrap mingled with *P. Lyallii*.—*P. deltoidea* Lindenb.—*P. Lyallii* Mitt. in Fl. N.Z. A small, imperfect, and doubtful specimen.

Lophocolea triacantha H. f. & T.—*L. bidentata* Nees.

Gottschea glaucescens Nees. (*Jungerm.* Hook. Musci Exotici). —*G. nobilis* Nees. (*Jungerm.* Hook. Musci Exotici).—*G. pinnatifolia* Nees. (*Jungerm.* Hook. Musci Exotici).—*G. marginata* Colenso. Agrees with a specimen from the author; there seems to be no description.

Balantiopsis diplophylla Mitt. in Hook. Handb. p. 753. (*Gymnanthe* Hook. Handb. p. 593; *Jungermannia* Flor. Antarct.).

Gymnanthe saccata Tayl. (*Jungermannia* H. Musci Exot.).

Lepidozia microphylla Lindenb.—*L. pendulina* Lindenb. Also with *Mastigobryum*.—*L. Lindenbergii* Gotts.—*L. capillaris* Lindenb.

Mastigobryum anisostomum L. & L.—*M. Taylorianum* Mitt. in Flor. Nov. Zel.—*M. Novæ-Hollandiæ* Nees.—*M. Novæ-Zelandiæ* Mitt. *l.c.*

Isotachys intortifolia H. f. & T. Flor. Antarct.—*I. squarrosa* (*Jungerm.*) Hook.; Musci Exot. t. 78; Handb. p. 503.

Trichocolea tomentella Nees.—*T. lanata* Nees.

Sendtnera juniperina Nees.—*S.* (*Mastigophora*) *scolopendra* Nees. (*Jungermannia* Hook. Mus. Exot.).—*S. flagellifera* (*Jung.*) Hook.

Polyotus claviger Gotts.—*P. Magellanicus* Gotts.

Radula physoloba Mont.

Madotheca Stangeri Gotts.

Lejeunia nudipes H. f. & T.

Steetzia (*Blyttia*) *Lyellii* Nees.

Padomitrium Phyllanthus (*Jung.*) Hook. (*Symphyogyna* Flor. Antarct.).

Symphyogyna Hymenophyllum Mont. (*Jungermannia* Hook. Exotici).

Aneura pinnatifida Nees. Scraps.

Marchantia Tabularis Nees.

Fimbriaria australis H. f. & T.

Anthoceros lævis Linn.

In *Transactions of the N.Z. Institute*, xxv. 1892, was published an account of another collection made by Mr. Helms in the Westland district, by Dr. Carl Muller. This collection comprised about eighty species of mosses, many of which were described as new. On some of these Dr. Kirk remarks as follows, and I am much in sympathy with his views, being inclined to regard many "new species" of late years as having much too slight characters and belonging to the class imponderables:—

Hypn. planifrons C. M. Close to *H. spininervium*, but of coarser habit. Leaves larger, but the cell structure identical.—*H. Helmsii* C. M. is *Isothecium Kerrii* of Handbk.

Trachyloma Helmsii C.M. appears a state of *T. planifolium*, with which it is always associated.

Eriopus Jelinckii C.M. I incline to think a form of *cristatus*.

Papillaria acrantha seems undistinguishable from *Papillaria* (*Meteorium*) *flexicaulis*.

Pilotrichella pallidicaulis C.M. seems very close to *P. mollis*.

Leucobryum interruptum and *laticaule* seem both to be forms of *L. candidum* Hampe.

Mnium Novæ Selandiæ is *M. rostratum* Handbk.

Polytrichum rubiginosum C. M. is *P. commune* Linn.

Catharinea glauca Hampe, a variety of *Polytr. magellanicum*.—*C. microdendron* C. M. is *P. dendroides* of Handbk.

Funaria sphærocarpa C. M. is *F. hygrometrica* Hedw.

Dicranum turgidum C. M. is *D. angustinerve* Mitt. (See *Flora Tasmaniæ*).

Campylopus leptocephalus C. M. is *C. introflexus* Hedw.

A number of others seem to be of as doubtful value.

NOTES ON CONVOLVULACEÆ, CHIEFLY AFRICAN.

By James Britten, F.L.S.

In the course of writing up our African Convolvulaceæ in accordance with Dr. Hallier's monograph (Engler, *Bot. Jahrbucher*, xviii. 81–160; 22 Dec., 1893), I have made some notes which may be worth recording. Mr. J. G. Baker (*Bulletin of Miscellaneous Information*, Feb. 1894, 67–74) has published some additions to the above, but neither of these authors has described all the novelties collected by Dr. Welwitsch, of whose plants we have in the British Museum a magnificent series, scarcely second to the study-set at Lisbon, with copies of all the valuable notes with which Dr. Welwitsch enriched his collections. These novelties I hope, with Mr. Rendle's assistance, to describe in a later instalment of this paper; at present I propose to call attention to certain necessary changes of nomenclature which it is desirable to make as early as possible, in order that the inaccurate names may not get into general circulation.

Ipomoea Buchneri Peter in Engl. Pr. Nat. Pfl. 43, p. 29 (1891).—Under this species Dr. Hallier places as var. β. *tomentosa* Welwitsch's no. 6182, adding a note, "In einer der beiden letzten Arten gehört jedenfalls *I. prismatosiphon* Welw., Apont. p. 585 n. 18 aus Pungo Andongo in Angola." Welwitsch's 6182 is the type of his *prismatosyphon*, and his name must therefore stand for the species. The following description is modelled upon Dr. Hallier's amplified diagnosis of *I. Buchneri* as modified by Welwitsch's specimens and notes :—

I. PRISMATOSYPHON Welw. Apont. 585 (1858).—Suffrutex erectus, 4–6 pedalis, pluricaulis; caules erecti rigidi lignosi crassi, cinereo-pubescentes, dense foliosi; folia breviter petiolata, oblonga, basi subrotundata, apice rotundata mucronata, margine inæqualiter undulato-subsinuata, supra molliter puberula, subtus dense albo-lanata, pinninervia; flores speciosissimi, maximi, axillares, patentes vel subnutantes, solitarii, breviter pedunculati, paullo infra calycem bracteis 2 maximis, intus glabris, subtus pubescentibus orbicu-

laribus, deciduis suffulti; sepala ovato-suborbicularia, magna, intus glabra, dorso et margine dense albo-lanata; corolla tubuloso-campanulata, glabra, 5 poll. longa, roseo-purpurea vel albido-rosea. Pungo Andongo, "in pascuis montosis cum *Cisso rubiginoso* nob. et *Cyclonematis* sp. freq." Welwitsch, 6182!—*I. Buchingeri* Peter, *β. tomentosa* Hallier in Engl. Bot. Jahrbuch. xviii. 152.

β. Buchingeri.—Caulis glaber, folia apice acuta utrinque glabra, bracteæ glabræ.—*I. Buchingeri* Peter in Engl. Pr. Nat. Pfl. iv. 3, 29.

The diagnosis given by Welwitsch is very brief (as indeed is the one published by Dr. Peter), but sufficient to separate the plant from *I. verbascoidea* Chois., to which he thought it might possibly be referred.

Ipomoea Welwitschii Vatke MSS. ex Hallier, *l. c.* 146.—This, for which Dr. Hallier cites no Welwitsch number, was based by Vatke upon our specimens of Welw. 6120, to which he has attached a ticket—"*I. Welwitschii* Vatke, pl. Hoepner ined." A form of this (Welw. 6120b) is the type of Mr. Baker's *I. aspericaulis* (Bulletin, 1894, 70, cited as "6120"). This has leaves half an inch or more in breadth, but the specimens under 6120 show a tendency towards broadening, and the plants agree in other characters. If the broad-leaved form require a name, it may be called *latifolia*, and the plant will stand as:—

Ipomoea Welwitschii Vatke, *β.* latifolia.—Leaves linear-oblong to ovate-lanceolate, acuminate, 2–3 in. long, ½–⅔ in. broad. *I. aspericaulis* Baker, *l. c.*

I refer to *I. Welwitschii* a plant collected by Buchanan (134) in the Shire Highlands; Welwitsch's specimens are from Huilla (Lopollo).

The following plants described as new have already been published:—

I. megalochlamys Baker, *l. c.* 72 = *I. pyramidalis* Hallier, *l. c.* 152; both authors base their descriptions upon Welw. 6113, and the British Museum specimens go far to reconcile the apparent discrepancies in the two.

I. benguellensis Baker, *l. c.* 69 = *Hewittia bicolor* W. & A.

I. xiphophylla Baker, *l. c.* 69 = *I. linosepala* Hallier, *l. c.* 130. Mr. Baker cites Welw. 6101 for this species, but the right number is 6191, as given by Hallier.*

The following specific names are preoccupied, and I propose to substitute others:

I. shirensis Baker, *l. c.* 74, non Oliv. in Ic. Pl. 1474 (1884) = I. Kirkiana.

I. discolor Baker, *l. c.* 69, non G. Don, Gen. Syst. iv. 270 (1837) = I. Bakeri.

I. acuminata Baker, *l. c.* 72, non Roem. & Schultes, Syst. iv. 228 (1819) = I. zambesiaca.

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* Another correction of a number may be made here. Mr. Baker (*l. c.* 25) cites Welwitsch 1524 as the type of his *Belmontia platyptera*: but this number is the type of *B. gracilis* Welw. in Trans. Linn. Soc. xxvii. 47. The British Museum specimens under this number belong to the latter species; Welw. 1512 agrees with Mr. Baker's description, and is evidently the number under which the plant will generally be found in herbaria.

Our set of the Welwitsch plants enables me to dispose of the names of the *Apontamentos* which are left doubtful by Dr. Hallier:—

I. oleracea Welw. Apont. 589 (Herb. 6121! 6252!) = *I. ovalifolia* Chois. "Herba cocta imprimis cum piscibus anatis mixta, a nigritis ob saporem gratum valde laudatum olus." Welw. MS.

I. Mendesii Welw. *l.c.* 584 (Herb. 6205–6208!) = *I. palmata* Forsk.

I. geminiflora Welw. *l. c.* 590 (6235 !). This number is referred doubtfully by Dr. Hallier to the plant for which he adopts the name *I. hispida* Roem. & Schultes, but is not that species. I shall have more to say of it later.

I. multisecta Welw. *l. c.* 589, doubtfully referred by Dr. Hallier to *I. coptica*, is certainly that species. Welw. 6253, cited by Dr. Hallier, is the type of Welwitsch's plant.

(To be continued.)

SHORT NOTES.

Introduced Plants in S.W. Surrey.—In view of the rapid rate of increase by which such aliens as *Erigeron canadense* and *Crepis taraxacifolia* have recently become widely spread in the neighbourhood, it may be interesting to note some of the less conspicuous introductions which are more or less permanent, and which might under favourable conditions increase in a similar way. In sandy fields along the Tillingbourne Valley occur *Alyssum calycinum*, *Silene dichotoma*, *Trifolium agrarium*, *Melilotus officinalis*, *Centaurea Calcitrapa* (one locality only), *Euphorbia Lathyris*, *Panicum glabrum*, *P. Crus-galli*, and *Setaria viridis*. In and about a waste field adjacent to Gomshall Tannery, and perhaps introduced with materials for the latter: *Adonis autumnalis*, *Ranunculus sardous*, *Camelina sativa*, *Lepidium ruderale*, *Herniaria hirsuta*, *Trigonella cærulea*, *Melilotus parviflora*, *Centaurea solstitialis*, *Anagallis cærulea*, *Amaranthus retroflexus* and *Lolium temulentum*. Another remarkable alien, which, however, is unlikely to spread far, is *Anemone Hepatica*, which has become established over some twenty or thirty yards of ground in a chalky wood above Shiere.—S. T. Dunn.

Additions to S.W. Surrey. — *Poterium muricatum*, downs E. of Guildford and above Gomshall; *Lonicera Caprifolium*, bushy ground by the Tillingbourne, below Shiere; *Cnicus arvensis* var. *setosus*, in plenty near E. Shalford; *Mentha sylvestris*, near Wonersh; *M. viridis*, Albury; *Chenopodium murale*, Gomshall.—S. T. Dunn.

Gloucestershire Aliens.—Two remarkable localities for aliens in Gloucestershire are described in this Journal at pp. 86 and 111, 1883. Another rich field for such plants is St. Philips Marsh, Bristol, a large flat tract of waste ground not far from the G.W.R. station. A great part is densely covered with *Diplotaxis tenuifolia*, and with this the following aliens occur:—*Lepidium ruderale*,

Melilotus officinalis, *M. parviflora*, *Panicum Crus-galli*, *Ambrosia artemisiæfolia*. The last, which is an abundant weed in the Northern United States, has been recorded under similar conditions from Cheshire, Oxfordshire, and Surrey (*Journ. Bot.* 1875, p. 14); there are specimens in the British Herbarium at S. Kensington from Lincoln and Cornwall also. *Nasturtium palustre*, a very rare plant in the neighbourhood, also grows here as a weed in dry ground.—S. T. Dunn.

Eleocharis acicularis.—(*Journ. Bot.* 1893, pp. 309, 371; 1894, 54). The submerged state is not always easily distinguished from that of *Juncus supinus*. In 1886 I found in Shetland what I believed to be the *Eleocharis*, judging by my knowledge of it as it sometimes grows in Surrey and Lincoln. But afterwards, on becoming acquainted with the remarkable states assumed by the *Juncus* when growing under water, I came to think that my plant might probably be the latter. That it is so is now confirmed by Dr. Buchenau, so that the record of *Eleocharis acicularis* still requires confirmation for Shetland. My mistake leads me to ask whether Mr. Praeger is quite sure that his plant (*Journ. Bot.* 1893, p. 309) is not *Juncus supinus?* The absence of the normal state of the *Eleocharis* from the margins of the water is suspicious, and suggests the possibility of the above alternative.—W. H. Beeby.

West Kent Records.—During the past few years I have noticed the following plants in this vice-county, which are not recorded for it in *Topographical Botany*, though I believe one or two have been since recorded, but I do not know when. The Rev. E. S. Marshall, however, informs me that he has notes of all the plants having been observed by his correspondents or by himself, except those marked *. The Rubi are all certified by the Rev. W. Moyle Rogers:—*Ranunculus trichophyllus*, Plumstead Marshes; *R. heterophyllus*, Eltham; *R. radians*, Shorne Warren. *Nasturtium sylvestre*, Grove Park. *Senebiera didyma*, Woolwich Arsenal (?not native). *Silene noctiflora*, Darenth and Plumstead (casual in both stations). *Sagina apetala*, Woolwich. *Lepigonum medium*, Plumstead Marshes; *L. marginatum*, Crossness. *Althæa officinalis*, Charlton. *Geranium lucidum*, Dartford. *Rubus fissus*, Chislehurst Common; *R. leucostachys*, Charlton; *R. Sprengelii*, Shooter's Hill; **R. echinatus*, Bostal Heath; **R. anglosaxonicus*, Shooter's Hill; **R. Babingtonii*, Bostal Heath; **R. longithyrsiger*, *R. flexuosus*, **R. Kaltenbachii*, and **R. fuscus*, Shooter's Hill; *R. viridis*, E. Wickham. *Saxifraga granulata*, Dartford. *Epilobium obscurum*, Woolwich Arsenal. **Bupleurum tenuissimum*, Cliffe. *Fœniculum officinale*, Greenhithe. *Valeriana dioica*, Plumstead Marshes. *Senecio viscosus*, Plumstead (also at Faversham in *East* Kent. *Top. Bot.* has 16 Kent east, the vice-county number for East Kent being 15). *Arctium majus*, Higham; *A. nemorosum* and *A. minus*, Woolwich Arsenal. *Carduus nutans*, Belvedere (to remove query). *Hottonia palustris*, Eltham. *Plantago maritima*, Crossness. *Beta maritima*, Gravesend. **Polygonum maculatum*, Woolwich Arsenal. *Alisma ranunculoides*, Chislehurst. *Lemna gibba*, *Triglochin palustre*, *Potamogeton natans*, **Scirpus Tabernæmontani*, and **Carex acuta*, all in Plumstead

Marshes. *Alopecurus fulvus*, Eltham, in two or three ponds; also near Bexley Heath. *Chara vulgaris* (var. *longibracteata*), Plumstead Marshes.—A. H. Wolley Dod.

Range of Utricularia minor (p. 53).—The Rev. E. S. Marshall's note reminds me that I gathered *Utricularia minor* in pools on the N.W. side of Loch Ericht, Inverness-shire, in July, 1883, at an altitude of considerably over 1000 ft. From my (not very clear) recollection of the locality, I should say it was some height above the lake, probably at 1500 ft. alt.; all I can say certainly, however, is that the lake being 1175 ft., it must have been at least 1200 ft. altitude. It was growing with *U. intermedia*, neither, at that time at least, being in flower.—H. N. Dixon.

Potamogeton trichoides in Surrey.—In 1879 I found at Hedge Court, drifted up to the east end of the mill-pond, large masses of a pondweed which at the time I thought to be *P. pusillus* var. *tenuissimus*. Afterwards I came to think it more likely to be *P. trichoides*, and on submitting it to various authorities on the genus, this opinion was confirmed; but in the absence of both flowers and fruit, which I have never been able to find, no definite name was given. This circumstance led me recently to examine all the "*tenuissimus*" in my collection, when I was struck with the appearance of the plant gathered in the canal near Aldershot by Mr. Bennett and myself in 1881, and recorded in this Journal for the same year, p. 345, where Mr. Bennett remarks on the very narrow tapering *rutilus*-like leaves. The plant was only coming into flower, none in fruit, and it seems to have been put down to *tenuissimus* without examining the flowers, which now prove to be, in the only specimens I have left, uniformly monogynous. As I record the plant on this character combined with the leaf characters, I desire to make it quite clear that the solitary pistil is not the result of accident, or the decay of the other three. All the flowers are clean and healthy, and my most forward spike shows clearly, without dissection, that each of its three flowers bears but a single pistil. Two other less forward spikes, treated with glycerine and water, soon assumed much the appearance of freshly gathered specimens, showing distinctly all the parts of the flowers, including the solitary pistil. This organ having then been removed from sundry flowers, it was found that there existed no vestige of any further pistils, rudimentary or otherwise. The leaves also being quite those of *P. trichoides*, I think that it can only be referred to that species, since I see no reason to expect it to prove to be a new species. A slight modification in habit is observable, but this is merely the state induced by the conditions under which the plant was growing, *viz.*, very thinly, in deep water. Since *P. trichoides* was only seen in small quantity, it may be well to point out that *P. pusillus* var. *tenuissima* does also occur in the same part of the canal. This record does not apply to the Hants plant mentioned (*l. c.*) by Mr. Bennett; of this I have no specimens.—W. H. Beeby.

Carmarthenshire Plants. — During a recent stay of a few days in the parish of Llanddarog, about six miles from Carmarthen,

I noticed the following species, unrecorded for Watson's 44th vice-county in *Top. Bot.* ed. 2:—*Viola Reichenbachiana* Boreau. Wood on limestone near Porthrhydd; it was well advanced in bud on January 15th, and would probably have been in flower, but for the previous week of severe frost. — *Rubus rusticanus* Mercier. Very common in the district. — *R. leucostachys* Schleicher. Frequent. These were the only two brambles which it was possible to name with certainty.—*Myriophyllum alterniflorum* DC. Ditches near the River Gwendraeth. — *Vinca minor* L. Near Bleany Farm, doubtfully wild. — *Potamogeton natans* L. Slow streams and ditches in the Gwendraeth Valley. — *Lastrea spinulosa* Presl. Alder copse near the Gwendraeth, below Porthrhydd.—In a narrow wooded ravine, locally called Blaeny Dingle, *Galanthus* was fairly plentiful, and had all the appearance of a native; there are no gardens or pleasure-grounds in the immediate neighbourhood. Flowers were opening on January 9th. — I also saw *Ranunculus Ficaria* L. var. *incumbens* F. Schultz in lanes near the village.—EDWARD S. MARSHALL.

NOTICES OF BOOKS.

THE BUITENZORG GARDENS.

Eine botanische Tropenreise. Von Prof. Dr. G. HABERLANDT. (Engelmann, Leipzig. 1893. Pp. viii, 300; 51 figs. Price 8 marks).

Der botanische Garten zu Buitenzorg auf Java. (Festschrift zur Feier seines 75 Jährigen Bestehens 1817–1892.) (Engelmann, Leipzig. 1893. 12 photographs and 4 plates. Pp. 426. Price 14 marks.)

IT would be hard to praise sufficiently Prof. Haberlandt's account of the tropical vegetation he went forth to see. Instead of the riotous mixture of botanical names and superlative adjectives that usually does duty for such accounts,—such as even Kingsley has strung together in *At Last*,—this book is a sober account of the observations of an accomplished observer, by no means too scientific in its style for the cultured reader, and full of interest for the botanist, whom the author literally enables to see through his eyes. This success is no doubt mainly due to the high state of preparation of the author for his journey, but largely also to the fact that the objective of his journey was Buitenzorg, where he found not only a perfect garden, but guidance from the greatest master of the study of tropical vegetation in its biological aspects. He visited Bombay and Singapore on his outward journey, and Ceylon on his homeward route; but Java and its small adjacent islets is the scene of the most of his studies. One would in fact consider it almost a guide to the advantages of Buitenzorg as a tropical garden, but for the existence of the book which is issued with it by the same publishers—the exhaustive work on Buitenzorg named at the head of this notice.

There have been accomplished great feats of investigation since Schleiden bitterly pointed out (*Grundzüge der wissenschaftlichen Botanik*) that by making a thorough investigation of a tree-fern stem a traveller in Brazil would perform a greater service to science than by collecting a few thousand dried new species, of which 80,000 were then known, without a thorough knowledge of one worth mentioning. The migrations of botanists to such places as Buitenzorg to study tropical vegetation, which are now so frequent, are probably due more to the great impetus given by Mr. Darwin to the study of adaptations than to any other single cause. The advance in our knowledge of plant structures and functions that has grown out of such visits to the tropics has been one of the most marked features of the history of Botany during the last twenty years. It has introduced new fields of investigation, as well as furnished explanations of many obscure matters. The part taken by this country in this advance has been a comparatively slight one—in inverse proportion to the facilities provided by our colonial tropical gardens, in only one of which (Peradeniya) is there a laboratory, which appears to languish somewhat for lack of visiting investigators. Calcutta, without the adventitious aid of emigrant botanists, has by its own officials and other resident botanists not only averted all possible reproaches of this kind from itself, but has shown us researches of which Buitenzorg would be proud.

After giving an account of his journey, including a visit to the Singapore gardens, Prof. Haberlandt begins with a description and a short history of the Buitenzorg garden, and its laboratory and other institutions, as well as the other gardens in connection with it. He next describes the climate in a fashion more interesting and intelligible than the familiar and concise efforts of the meteorologist. The most interesting part of the book, however, is contained in the chapters on tropical trees, their habits of growth, &c., involving points of comparison with European trees; on characteristic tropical leaves (of particular interest), and on tropical flowers and fruits. Successive chapters on lianas, on epiphytes, and on the mangrove, are full of most suggestive observation, and it is not possible to get within so short a compass a better picture of these forms of vegetation so exclusively and characteristically tropical. A too brief chapter on the relations of ants and plants follows these—with a short description of *Myrmecodia*, that sad example for warning to the transcendental school of speculative botanists who know all about "why" insects run their rigs among vegetation. This salutary lesson, by the by, we owe to the investigation by Treub in the Buitenzorg garden, and for some time there has been, and will be, less indecent haste in obeying Solomon's advice to the sluggard. Prof. Haberlandt next devotes several chapters to his botanical excursions, written in a more spirited style than the earlier portions of the book, one to the animal life of Java, another to the natives and their manners and customs, and concludes with his return journey *via* Ceylon and Egypt. German works of this kind are commonly written in such a tedious style, turgid with verbiage, that it is a genuine pleasure

to meet with an exception of such special merits in this respect as Prof. Haberlandt's book. It may be warmly recommended to all who have a moderate facility in reading German as an excellent account of tropical vegetation, and the biological problems that are connected with it. The illustrations from the author's sketches are not things of beauty, nor are they exactly instructive. This is to be regretted the more since good pictures are the only things left to be desired.

It is impossible in short compass to give an adequate idea of the "Festschrift" of the Buitenzorg garden edited by Dr. Treub on the occasion of the 75th anniversary of its establishment. The principal reason for this is the condensed character of the contents of the book. One can hardly do better than merely say that if anyone wishes to know anything of Buitenzorg and its history he will find it here, or if he desires information as to the aims, utility, constitution and character of a tropical botanical garden, he could hardly do better than select this volume. The introductory chapter is a reprinted address by Dr. Treub, the Director, on the aims of a tropical garden, delivered by him on the 75th anniversary of the *Hortus Bogoriensis*. It is followed by a history of the gardens by the Director, and by special descriptions of the several parts of it and its institutions by Drs. Burck, Janse, and Van Romburgh, his assistants. The reader will gain by even a casual inspection of this admirable volume (illustrated with excellent photographs), an idea of the great activity in the advance of Botany of which this famous garden has been the scene. There is a catalogue here of those who have visited the gardens for research, and to select a few of the recent names will recall the fruits of their visit:—Graf zu Solms-Laubach, Prof. Goebel, Mevrouw Weber van Bosse, Dr. Warburg, Prof. Schimper, Dr. Karsten, Prof. Stahl, Prof. Haberlandt—but there is a page here of them, and it is perhaps invidious to choose at all.

What have we to show like this? The munificence of German Universities enables its teachers to make these journeys, and the sole corresponding institution in this country is the excellent but necessarily limited arrangement for the occasional export of a young botanist to Peradeniya. Let us hope that this seedling will yet grow up, flourish, and bear fruit. G. M.

The British Moss-Flora. By R. Braithwaite, M.D. Part XV. December, 1893. London: 303, Clapham Road. Price 6s.

This fine monograph is now so far advanced that only one more part is needed to complete the *Acrocarpi* and the second volume. "Vol. iii. will comprise the *Pleurocarpi* and *Sphagna*."

The present part contains forty pages and six plates in illustration of thirty-one species. The genera treated of are six:—*Bryum* (end), *Conostomum*, *Bartramia*, *Philonotis*, *Breutelia*, *Catoscopium*; the five latter constituting the family *Bartramiaceæ*. Dr. Braithwaite has conferred upon bryologists no small benefit by his carefully elaborated treatment of the British species of the difficult

genus *Bryum*. In his opinion we have thirty-eight native species, of which thirteen are described in the present part. A comparison with Hobkirk's *Synopsis* (Ed. ii.) yields the following results. *B. gemmiparum* retains specific rank. At the time of preparing the plates, Dr. Braithwaite had referred it to *B. alpinum* (*cf.* Jameson, *Illustrated Guide*, p. 59), but upon subsequent reflection he found it to be nearer to *B. Muehlenbeckii*. "It is substantially a plant of the Mediterranean region," and to the best of our knowledge is quite sterile in this country. *B. Schleicheri* var. *latifolium* is shown to be a variety of *B. turbinatum*. *B. cyclophyllum* Br. et Sch., recorded from the Grampians by the Rev. J. Ferguson, is an addition, as is also the rare Cornish species *B. juliforme* Schimp., which belongs to the section *Sclerodictyon* described in Part xiv. *B. obconicum* is held to be not specifically distinct from the variable *B. capillare*, and accordingly takes rank as a variety. Similarly, *B. origanum* is united with the very variable *B. pallens*. The genus *Bartramidula* is suppressed, and its only species, *B. Wilsoni*, is transferred to the section *Philonotula* of the genus *Philonotis*, which appears to be a sufficiently natural position for it. Bryologists will view with regret the disappearance of such familiar names as *Bryum roseum*, *Bartramia Halleriana*, and *Breutelia arcuata*. Dr. Braithwaite follows the practice of maintaining the oldest specific designation irrespective of genus, and it is in accordance with this that these names disappear. This hardly applies, however, to the restoration of *Bryum proliferum* Sibth. (1794) in place of the prior name *B. roseum* Schreb. (1771). Linnæus is the only author who used the name *proliferum*, and he used it only as a varietal name. He called the plant *Mnium serpyllifolium* γ. *proliferum*. The other two cases are awkward changes in the light of the fact that *Bartramia Halleriana* Hedw. and *Breutelia arcuata* Schimp. were the names employed by the authors of the two generic names, and have been almost universally adopted ever since. *Bartramia* and *Breutelia* contained each but a single constituent species, to wit, the two plants in question. Each case, however, can readily be tested with the help of the carefully dated bibliography supplied with each species.

In conclusion, attention may be called to Dr. Braithwaite's note on p. 212, as to the valuable character afforded by the form of the bracts of the male inflorescence for the discrimination of closely allied species of *Philonotis*. A. G.

La Conquête du monde végétal. Par Louis Bourdeau. Paris: Félix Alcan. 1893. 8vo, pp. 374.

M. Bourdeau has undertaken, and has gone some way towards accomplishing, a herculean labour which few writers of the present day would have attempted. This is no less than a history of the development of the useful arts in eight octavo volumes. The volume before us is the third of these, and judging from it M. Bourdeau seems admirably equipped for his task. Though he nowhere exhibits the critical discrimination in botanical matters of a DeCandolle, he has consulted a multitude of authorities and

imparts the results of his studies in that easy style, so characteristic of French writers, which makes one almost doubt his thoroughness. Nevertheless, his authorities, though they range from Holy Scripture, Homer, Herodotus, Theophrastus, and Pliny to the most recent French and even English writers, are admirably chosen. Though, perhaps, like DeCandolle, he lays rather too much stress upon philological evidence, he has also some most interesting statistics, and his general reflections are free from the wildness which sometimes characterises books of this class.

Beginning with the pre-historic time, when there was no cultivation, and wild plants alone were gathered, he deals in successive books, arranged somewhat artificially, with food-plants, economic plants,—*i. e.*, those used in preparing drinks, oil and sugar,—forage-plants, officinal plants, industrial plants,—chiefly textile and dyeing substances,—woody and ornamental plants. He then treats of the future of agriculture, the processes of cultivation, and the production and preservation of improved varieties. The following passage is, perhaps, a fair example of his style:—

"According to the testimony of Champier and of Olivier de Serres, wheat, in the 16th century, was used only at the tables of the rich. The mass of the people lived on barley or rye. It was the same in other countries. A century later, white bread, hitherto the privilege of wealth, had all but entirely replaced black bread. The extension of our cultivation of wheat shows both the improvement of agricultural methods and the progress of general well-being. The future destiny of this valuable grain is to become the centre of our whole industrial system. France, which in 1789 grew wheat on four million hectares and only obtained from them 33 million hectolitres, now has seven million hectares and harvests on an average 110 million hectolitres, amounting in value to 2000 million francs. In the other states of Europe the production of wheat reaches about 100 million hectolitres in Russia, 50 in Austria-Hungary, the same amount in Italy, 40 in Spain, 29 in Great Britain, 25 in Germany, &c. Much progress has yet, however, to be made, and France herself, though she heads this list, would have to produce 140 million hectolitres in order to feed all her population with wheat, one-sixth of them living at present upon inferior cereals. Having received this treasure, the cause of her wealth, from Asia, Europe has handed it on to the other parts of the world that she has conquered for civilization. America owes to a poor negro, a slave of Fernando Cortez, the first wheat-plants that bore fruit on her soil. This Triptolemus of the New World, having found three grains of wheat in the rice sent as provender for the expedition, sowed them, and gave to Mexico her first harvest. Three and a-half centuries later, the United States, the most important wheat-producing centre in the world, yields (1882) 182 million hectolitres. We may also mention Canada, which already reaches 13, and the Argentina with 10. India, only recently engaged in the same production, already yields more than 100 million hectolitres, and Australia has made a beginning with 8. The total production of wheat in the civilized world was esti-

mated in 1882 at 725 million hectolitres, valued at more than 10,000 million francs and representing the subsistence of 200 million human beings."

No one will be surprised when M. Bourdeau speaks of the cultivation of cereals as "a first cause and dominant influence in the origin of every system of civilization" (p. 109); but it strikes one as more novel when, in his chapter on condiments, he says, "The trade in spices made the fortune of Venice. Later, it was the wish to trace them to their sources and to monopolise the great profits of which the Turkish invasion had deprived the Venetians, that inspired the heroic expeditions of Columbus and de Gama" (p. 102). Englishmen may, perhaps, resent the author's banter, when, speaking of the gooseberry, he says (p. 60), "The English especially set great store by it, because it is one of the few summer fruits that can ripen under the cloudy skies of Great Britain, where, according to Chamfort's *mot*, there are hardly any ripe fruits except those that are cooked." The book is full of interesting information and, if translated, would make a good companion to DeCandolle's *Origin of Cultivated Plants*. Its botanical nomenclature is sometimes antiquated, as when the Water-cress appears as "*Sisymbrium nasturtium*, Lin.," and the potato-disease as "*Botrytis infestans*"; and there are a good many more misprints than appear in the table of errata, such as the amusing "*Acer arietinum*, Lin.," for the Chick-pea (p. 72); but the most serious defect in the work is the absence of an index.

G. S. Boulger.

ARTICLES IN JOURNALS.

Bot. Centralblatt. (No. 6). — W. J. Goverts, 'Ueber *Quercus*-Arten mit offener Spaltung.' — (Nos. 7, 8). P. Klemm, 'Aggregationsstudien' (2 plates).

Bot. Gazette (Jan. 17).—J. D. Smith, 'Undescribed plants from Guatemala' (2 plates).—J. H. Pillsbury, 'The colour description of Flowers.'—C. MacMillan, 'Archenema, protonema, and metanema.'—A. Schneider, 'Mutualistic symbiosis of algæ and bacteria with *Cycas revoluta*.' — A. F. Foerste, 'Oaks as weeds.' — Id., 'A new compass-plant' (*Aster concolor*).—C. DeCandolle, New *Meliaceæ* from Mexico.—G. F. Atkinson, 'Frost freaks of herbaceous plants.'

Bot. Notiser (häft. i.). — B. Jönsson, 'Studier öfver algaparasitisur hos *Gunnera*.'—P. Magnus, *Taphrina Cornucervi*.—O. Ekstam, 'Om monströst utbildade Lålkfjäll hos *Lappa minor*.'—C. O. v. Porat, 'Kungsörstraktens Hieracier.'

Bot. Zeitung (Feb. 16).— K. Schumann, 'Spross- und Bluthenentwickelung in der Gattung *Crocus*, nebst einigen Bemerkungen über die Gipfelblüthen.'

Bulletin de l'Herb. Boissier (Jan.) — F. Crépin, 'Excursions rhodologiques dans les Alpes.'—A. Baldacci & F. Filippucci, 'Contribuzione allo studio delle gemme e specialmente di alcune ricerche

sulla supergemmazione.' — F. Renauld & J. Cardot, 'Mousses nouvelles de l'Herb. Boissier.' — R. Buser, 'Sur les Alchimilles subnivales.'—J. Müller, 'Conspectus Lichenum Novæ Zelandiæ.'

Bull. Torrey Bot. Club (Dec. 26). — J. K. Small, 'Altitudinal distribution of Ferns of Appalachian Mountain System.' — T. Morong, 'Notes on *Iridaceæ*, &c.'—T. H. Kearney, 'Flora of South-eastern Kentucky.' — B. D. Halsted, 'The Solandi Process of Sun-printing.' — Id., 'Heliotropism of *Malva rotundifolia*.' — (Jan. 25). E. G. Britton, 'Contributions to American Bryology: iv.' — J. K. Small, 'Botany of South-eastern U.S.' (2 plates). — A. A. Heller, 'Plants of Virginia.'—N. E. Britton, 'New or Noteworthy American Phanerogams' (*Meehania*, gen. nov. (*Dracocephalum cordatum* Nutt.) 1 plate). — F. V. Coville, 'The Genus *Hemicarpha* in *N.* America.' —T. L. Scribner, *Panicularia laxa*, *Poa Chapmaniana*, spp. nn.— E. J. Durand, '*Buxbaumia indusiata* in N. York.'—E. P. Bicknell, '*Ranunculus micranthus* Nutt.'

Gardeners' Chronicle (Feb. 3). — *Polypodium grenadense* Jenman, *Asplenium barbadense* Jenman, spp. nn.

Irish Naturalist (Feb.).—S. A. Stewart, 'Notes on Flora of N.E. Ireland.'

Journ. Linn. Soc. (Bot.): xxx. 206 (Feb. 1).—G. F. Scott Elliot, 'Botanical Results of Sierra Leone Boundary Commission.'—W. B. Hemsley, 'Plants from Tibet' (2 plates).

Oesterr. Bot. Zeitschrift. (Feb.). — E. Heinricher, 'Studien an den Blüthen einiger Scrophulariaceen.' — P. Dietel, '*Uredo Polypodii*.'—J. Lütkemüller, 'Die Poren der *Closterium*.' — R. v. Wettstein, 'Die Arten der *Euphrasia*.' — J. Freyn, 'Plantæ novæ Orientales.'

BOOK-NOTES, NEWS, &c.

We have received from our correspondent Mr. Tokutaro Ito "A Memorial Work, chiefly on Botany and Zoology, in commemoration of the ninetieth anniversary of Keisuke Ito," his grandfather. There are two volumes, the first containing various papers by Tokutaro Ito, the second a "Descriptive Catalogue of various Exhibitions relating to Botany," &c. The work is prefaced by a portrait and notice of Keisuke Ito, which latter we are unable to appreciate, owing to our ignorance of Japanese; but our readers will remember that a portrait of the same botanist accompanied an interesting paper "On the History of Botany in Japan," which Mr. Tokutaro Ito published in this Journal for August, 1887.

Although the *Biographical Index of British and Irish Botanists* has been very favourably noticed, and we have received numerous and gratifying assurances of its usefulness from those best qualified to express an opinion, its sale has been much smaller than had been anticipated, and the authors are likely to lose considerably by their undertaking. We shall therefore be grateful if those who can do so will recommend the book to their botanical friends.

We ought to have mentioned sooner Dr. Hjalmar Kiærskou's *Enumeratio Myrtacearum Brasiliensium* (Hanniæ, 1893), which forms the most recent part of Dr. Warming's *Symbolæ* of the Flora of Central Brazil. The author enumerates 418 species, of which, as might have been expected, a large proportion are new. Collectors' numbers are freely cited, there is a good index of species, and twelve of the twenty-four plates are devoted to reproductions from photographs of the specimens described.

We are glad to learn that the *Flora of Tropical Africa* is to be resumed, and that vol. iv. is in active preparation. The very large additions which have been made to our knowledge of African plants since the third volume of the *Flora* was published in 1877 will render the later part of the work much more extensive than the former, to which, indeed, a supplement is already required.

We learn from the *Bulletin of Miscellaneous Information* for February that a portrait in oils of Samuel Frederick Gray has been presented to the Royal Gardens, Kew. A letter from the donor, Mr. S. O. Gray (a grandson of S. F. Gray) is given, in which the claim put forward by Dr. J. E. Gray to the authorship of the *Natural Arrangement of British Plants* is characterised as "an unfair statement." The writer of the notice says that Dr. J. E. Gray "put it on record that he himself was practically the author of the work." In this Journal for 1865, 297, and 1872, 374, will be found Dr. Gray's account of the matter, as well as in a "*List of the Books . . . by Dr. J. E. Gray*," printed for private distribution in 1872. It is fair to say that in each of these accounts Dr. J. E. Gray is careful to claim only the "synoptic" or systematic part of the book; and as Mr. S. O. Gray considers that "the work was a joint production," there does not seem to be as much discrepancy between the two statements as might at first sight appear. A good deal of information regarding the authorship of the *Arrangement*, with interesting letters from Sir J. D. Hooker and Mr. Carruthers, will be found in a paper, "Les Genres Hépatiques," published by M. Le Jolis in *Mém. Soc. Nat. de Cherbourg*, xxix. (1893). It may be of interest to add that Dr. J. E. Gray's copy of the *Arrangement*, the systematic portion of which has numerous additions and annotations in his hand, was presented by Mr. S. O. Gray to the Botanical Department of the British Museum.

Under the head of "Development: a Dream of Political Darwinism," *Punch* for Feb. 17 has an amusing poem on the vicissitudes of Mr. Joseph Chamberlain's political opinions, accompanied by a still funnier picture by Mr. Linley Sambourne. But surely Mr. Punch should know that *Anthurium Chamberlainianum* is not an orchid!

The first part of the Rev. J. M. Crombie's "Monograph of Lichens found in Britain: being a descriptive catalogue of the species in the Herbarium of the British Museum" has just been issued by the Trustees. Mr. Lister's Monograph of the Mycetozoa, which will also be published by the Trustees, is ready for press, and will shortly be issued.

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BIOGRAPHICAL INDEX

OF

BRITISH AND IRISH BOTANISTS

BY

JAMES BRITTEN, F.L.S., & G. S. BOULGER, F.L.S.

THIS INDEX, which was first published in the 'Journal of Botany,' has elicited general interest. It originated in the supposition that the want of such a reference-list, often felt by the authors, might also be shared by others; and the numerous expressions of interest and approval have fully justified the belief. Numerous additions to the information given in the Journal have been made, and some corrections. The list of names has also been considerably extended.

"The utility and general accuracy of this compilation were rendered evident in the course of its publication in the *Journal of Botany*, and the favourable impression then received is amply confirmed now that the Index appears revised and completed up to date."—*Athenæum*, Dec. 30, 1893.

"The details given by the authors are very concise, but, considering that they comprise reference to other sources of information, they are adequate. The acquirements of the authors, and the unrivalled facilities at their disposition in the Museum, offer the best guarantees that their work has been well done. Those interested in the history of horticulture, as well as in that of botany, will find the work indispensable."—*Gardeners' Chronicle*, Sept. 9, 1893.

"The authors have done their work well, and made a valuable contribution to botanical literature."—*Natural Science*, Oct. 1893.

"All persons interested in the history of botany and of the botanists of these islands, but more especially those actively engaged in botanical work involving historical research, will welcome a reprint of the 'Biographical Index,' which ran through four volumes of this Journal, beginning in 1888. . . . And this little book is, after all, the foundation, and a good substantial one, too, of the history of British and Irish botanists, which may some day develop into as complete and exhaustive a work as Colmeiro's admirable *La Botánica y los Botánicos de la Península Hispano-Lusitana*. No other nation, I believe, possesses such a work as the latter, and no second nation, so far as I am aware, just such a work as the former."—W. Botting Hemsley in *Journ. Bot.*, Sept. 1893.

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BRITISH AND FOREIGN.

EDITED BY

JAMES BRITTEN, F.L.S.,

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South Kensington.

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Potamogeton polygonifolius *Pourr.* var. pseudo-fluitans *Syme.*

POTAMOGETON POLYGONIFOLIUS v. PSEUDO-FLUITANS.

By Alfred Fryer.

(Plate 342.)

By the courtesy of Professor I. Bayley Balfour I have been able to examine the British Potamogetons of the Edinburgh Herbarium, and to make a leisurely comparison of many of the more interesting forms with those in my own collection; I am further indebted to him for allowing me to figure and describe the specimens regarded by Dr. Boswell Syme as types of his variety *pseudo-fluitans*.

These specimens are of unusual interest to students of the genus *Potamogeton*, because the variety seems to be unrepresented in Dr. Syme's own herbarium (now in the possession of Mr. Hanbury), and because it has been regarded as depending on them rather than on the sufficiently clear description in *English Botany*, written before they were selected as types; probably before they were known to the author of the proposed variety.

The specimens are mounted on two sheets, each of which is labelled "*Potamogeton fluitans*, River Leven, Loch Lomond, 1824." On each sheet Dr Syme afterwards wrote "*P. polygonifolius* var. *pseudo-fluitans?* J. B. S.," evidently then in doubt as to the correctness of his reference of them to the form previously described in *English Botany* in 1869. Subsequently he wrote in the Exchange Club *Report* for 1876:—"The most characteristic specimens of var. *pseudo-fluitans* that I have seen are in the Edinburgh Herbarium, from the River Leven, but the name of the collector was not given: J. T. Boswell."

This state of *P. polygonifolius* has often been mistaken by botanists for *P. fluitans*, to which it bears a superficial resemblance, and it is probable that Dr. Syme at first hesitated as to which species the River Leven form should be referred. A glance at Plate 342 will show how like the two species are in general facies; but the following description will explain the wide difference in specific character, and show that the River Leven plant is really a form of *P. polygonifolius*:—*Rootstock* with slender stolons. *Stem simple*, terete, slender, flexuous with long internodes. *Leaves all stalked:* lower leaves submerged, alternate, elongate, strap-shaped, narrowly attenuate towards each end, membranous, 5-ribbed, with elongate cancellations on each side of the midrib, cross reticulations coarse, ascending, continuous, apex elongately acuminate, 5–8 in. long by $\frac{1}{4}$–$\frac{5}{8}$ in. wide; *upper leaves* opposite, floating, coriaceous or subcoriaceous, or membranous, long-stalked, narrowly elliptical or elliptical-lanceolate, attenuate towards the petiole, lamina not decurrent, apex slightly or longly acuminate, 13-ribbed, *with all the ribs prominent on the under side*. Petiole 4 in. long; *lamina* $3\frac{1}{2}$ in. long by $\frac{3}{4}$ in. wide; *all nerves opaque*. *Flower-spike much shorter than the subtending foliage; peduncle* rather stout, *equal*, 1 in. long; *spike* cylindrical, $\frac{5}{8}$ in. long, *fertile*. *Stipules* scarious,

soon decaying, short, clasping; upper patent, acute, 1½ in. long. Colour of the whole plant greenish brown, upper leaves darker.

This description, excepting the variable proportions of length and breadth of leaves, would serve for many of the deep-water forms of *P. polygonifolius;* and if we turn to Dr. Syme's original description in *English Botany*, ed. iii. (1869), and compare it with the specimens above described, we find a sufficient specific correspondence:—"Var. *β. pseudo-fluitans.* Lower leaves membranous, elliptical, strap-shaped, attenuated at each end; floating leaves subcoriaceous, gradually attenuating into the petiole" (*l. c.* p. 28). From this description I think it is clear that we need not limit the varietal name of *pseudo-fluitans* too strictly, but give it as wide an application as we do to his vars. *α.* and *γ.*

Before pointing out the differences between the plant from the River Leven and *P. fluitans* of Roth, I think it will be well to ask botanists who have studied the living forms of *P. polygonifolius* whether it is probable that any of them are more than *states* due to local conditions, and whether they do not pass from one state to another under changed conditions of growth? Unfortunately, *P. polygonifolius* is almost absent from the Eastern Counties, and I have only once seen it growing wild, on Dersingham Heath, West Norfolk. That was the var. *γ. ericetorum* of Syme. In default of original observations I gladly quote a passage from the *Flora of Oxfordshire*:—"The plant is the heath form *P. ericetorum* Syme. In 1885 I noticed the floating form in a small pond near the brickyards, which now probably occupy the old station, and a month later, then being dried up, the plant assumed the heath form" (*l. c.* p. 383). A clear statement like this, by so careful a botanist as Mr. Druce, seems to me conclusive that vars. *α.* and *γ.* are merely states, not true varieties; and I cannot help thinking that var. *β.* is only a state of var. *α.* growing in running water.

Although I have not been able to collect *P. polygonifolius* myself, I have had many forms of it sent me to cultivate, and I have not found any of these forms permanent under cultivation at present. This, however, is no proof that permanent forms do not exist; all we can safely accept at present is the change of var *α.* into var. *γ.*

Potamogeton fluitans is separated from *P. polygonifolius* var. *pseudo-fluitans* by the peduncles being thickened towards the upper part by the barren spike, and by the lateral ribs being sunk in the substance of the leaf on the under side; while in *pseudo-fluitans* the peduncles are equal in thickness thoughout, the spikes appear to be fertile, and the ribs are prominent on the under side of the lamina. There are other differences in habit and in the lower leaves and stipules which I do not dwell upon here, because of the insufficiency in number and perfection of the specimens of *pseudo-fluitans* available for comparison.

I am not inclined to regard *pseudo-fluitans* as a northern form of *polygonifolius*, because I have seen specimens, collected at Gamlingay in Cambridgeshire, which seem to me to belong to the variety as defined by Syme. In my herbarium there is a specimen collected by the late Abram Sturrock, but unnamed by him,

labelled "Perth, Laird's Loch, Aug., 1873. A. Sturrock." This specimen I had named "var. *pseudo-fluitans?*," and now I have examined the Edinburgh types, I have no doubt about the correctness of the reference. Also a specimen labelled "*Potamogeton* ——, Tiggan, Orkney Isles, 1875, leg. J. B. Syme," belongs to the same variety.

I am induced by the examination of a great number of specimens of *P. polygonifolius* to think that species, like *P. natans*, has no permanent true varieties, but that the forms are mere states due to local surroundings, and which, under altered conditions of growth, would lose their distinctive features and revert to the ordinary heath or shallow-water form, which I take to be the type of the species. It is to be hoped that the *polygonifolius* form of the River Leven will be examined by some botanist who may have the opportunity of observing them at different seasons of the year, and of comparing the deep- and shallow-water forms while actually growing. If this be done, and if roots of the different forms be properly cultivated, we shall then have firmer grounds on which to base an opinion than any quantity of dried specimens can afford.

In the case of *P. natans* there is no form of leaf, and no peculiarity of habit, which cannot be produced from one rootstock by skilful cultivation! And as far as my limited experience in growing *P. polygonifolius* goes, I am inclined to think that similar results may be obtained by cultivating it under varying conditions. I would suggest to any botanist who may wish to test the deep-water forms by growing them, that the first aim should be, after the rootstock is fairly established in deep stagnant water, to obtain the *land-form*. This can be done by gradually diminishing the depth of the water until the whole of the foliage is completely exposed to the air. Then let the rootstock be transferred to a shallow stream, which should be gradually deepened as growth proceeds.

In regard to the specimens described in the present note, I think they grew in deep running water which became shallow, but not much less swift, as the plant came into flower. Looking at the Gamlingay specimens, I cannot regard var. *pseudo-fluitans* as a northern, or even as a local form, but rather as a state of the species which might be produced in any locality by suitable conditions.

Before concluding this note, it will be as well to explain the way in which Mr. Morgan has produced his beautiful and faithful plate, the very best I have yet seen of any *Potamogeton*. As the specimens lie on the sheets to which they are fastened, little of the venation of the leaves is to be seen, and to draw or to examine just the surface of a *Potamogeton* that one does see in this condition of a dried specimen is of little use; so the plant is held up to the light and the net-work of veins is represented as thus seen. No restoration of damaged leaves and no "improvement" of Nature has been attempted. Unfortunately the size of the plate has compelled a reduction of one-third less than the natural size, but in all other respects the plate may be studied with almost as much advantage as the original specimens.

I sincerely thank Professor Balfour for allowing the specimens to be figured in this *Journal;* and my thanks are also due to the Editor for letting me describe them from a field-naturalist's point of view.

GRASSES FROM JOHORE.

By A. B. Rendle, M.A., F.L.S.

The grasses comprised in the following list were collected in 1892 by Mr. J. B. Feilding, lately in the service of the Sultan of Johore. As will be seen from his list of localities, Mr. Feilding collected in widely separated parts, including the islands off the East Coast and Mount Ophir, away on the Malacca frontier in the north-west. From Mount Ophir he has brought a new species of *Ischæmum*, and I have included in the list a second new species of the same genus from Singapore. With this single exception the grasses are all from Johore.

Paspalum distichum Burm. Kwala Sedili Besar.

P. brevifolium Flugge. Pulau Tinggi, 300 ft.

Isachne australis R. Br. Top of Mt. Ophir (Gunong Leydang).

Panicum (*Digitaria*) *sanguinale* L. var. Kwala Indau, 50 ft.

P. (*Digitaria*) *sanguinale* L. var. *debile* Hook. fil. Fl. Brit. Ind. vi. ined. Kwala Indau.

P. (*Digitaria*) *heteranthum* Nees. Jamboo Luang.

P. (*Trichachne*) *cimicinum* Retz. Bûkit Muar, 150 ft.

P. (*Brachiaria*) *nodosum* Kth. Scudai Road, Sept.

P. (*Echinochloa*) *Crus-Galli* L. Pengarram, Dec. (H. Lake).

P. (*Ptychophyllum*) *plicatum* Lam. Pulau Aor, 100 ft.

P. (*Hymenachne*) *indicum* L. Bûkit Muar, 150 ft., and Pulau Tinggi, 300 ft.

P. (*Hymenachne*) *myurus* Beauv. Parit Jawa, Nov. (aquatic).

P. (*Eupanicum*) *concinnum* Nees ex Steud.

P. (*Eupanicum*) *extensum* Steud. Bûkit Muar, 150 ft.

P. (*Eupanicum*) *incomtum* Trin. Pulau Aor, 100 ft.

P. (*Eupanicum*) *hermaphroditum* Steud. Pulau Tinggi, 300 ft.

P. (*Eupanicum*) *trigonum* Retz. Bûkit Muar, 150 ft., Nov. Pulau Tinggi, 300 ft. Oct.

P. ischæmoides Retz. Bûkit Muar, 150 ft.

Oplismenus compositus R. & S. Pulau Tinggi, 300 ft.

Setaria italica Beauv. Kwala Sedili Besar.

Thuarea sarmentosa Pers. Jamboo Luang, Nov. Growing in sand on the beach.

Spinifex squarrosus L. Jamboo Luang.

Coix Lacryma-Jobi L. Pulau Aor, 100 ft., Sept.

Zea Mays L. Kwala Sedili Besar.

Oryza sativa L. Parit Jawa.

Zoysia pungens Willd. Pulau Tinggi, 300 ft.

Pollinia Ridleyi Hack. in Oesterr. Botan. Zeitsch. 1891, p. 8. Hitherto known only from one locality in Pahang. Jamboo Luang.

Rottboellia glandulosa Trin. Jamboo Luang.
Ischæmum muticum L. Kwala Sedili Besar.

Ischæmum Feildingianum, sp. nov.—*Culmis* teretibus glabris, nodo penultimato et antepenult. ramoso, internodo quoque vaginis duabus obtecto, nodis pilosis; *vaginis* internodos binos tegentibus, basi glabris tum pubescentibus, demum parte superiori e vagina inferiori exserta scabrido-villosis, quam laminæ $\frac{1}{3}$-brevioribus, teretiusculis; *ligula* 1-linea brevi, truncata, chartacea, ciliolata, in auriculas vaginæ breves abiente; *laminis* a basi cordata lanceolatis fere ab ipsa basi angustatis, acuminatis, patentibus, rigidis, supra glabris, infra pubescentibus, margine scabridis, costa media et nervis lateralibus utrinque 8–10 percursis; *racemis* in apice culmi ramorumque binis altero breviter pedicellato, altero sessili, crassis et arcte appressis, articulis, pedicellis triangulis, angulis molliter albo-ciliolatis; *spicula sessili* late oblanceolata, gluma Ima inferne coriacea, superne membranacea, dorso plana et nervis 6 anastomosantibus viridibus notata, basi glabra, superne longe pilosa, lateribus recurvatis superne carinatis IIam amplectante, carinis sub apice obtusa bidentula membranaceo-albo-alatis, margine scabridula; IIda Iam subsuperante, convexa, 6-nervia, carinata, carina in aristam sub-lineam apice continuata, superne scabrida; IIIia hyalina, 3-nervia, acuta, paleam cum flore ☿ fovente; IVta hyalina, profunde bifida, aristam perfectam scabridulam 6–7-lineam e sinu emittente, paleam hyalinam cum ovario ovali fovente; *sp. pedic.* lanceolata, sessili vix breviori, gl. Ima oblique lanceolata, basi glabra, superne longe pilosa, carina superne membranaceo-albo-alata; IIda velut in sessili sed minore et obliqua, latere exteriori angustiori; IVta exaristata; antheris sub-bilineis.

Only the upper part of the culm or its branches present, these branching at the second and third nodes from the top and bearing the compressed paired racemes, which are 3–3½ in. long. The leaf-sheaths each extend over two internodes, and are glabrous below where protected by the next lower sheath, becoming pubescent above and in the upper part scabrido-villose; they are one-third shorter than the leaves, which are 4–5 in. long and 7–9 lines broad, lanceolate, but narrowing almost from the cordate base, pubescent on the lower surface only, with a scabrid margin, and 8–10 nerves on each side the midrib. Of the paired racemes one is sessile, the other on a short stalk two lines long; the triangular ciliated rachis-joints are nearly two lines long, the similar pedicels 1½ lines. The broadly oblanceolate sessile spikelet, including the callus (⅔ line), which has a beard twice its own length, is 4 lines long, the lanceolate stalked spikelet is a little shorter, 3½ lines long. In the sessile spikelet the first glume is glabrous and coriaceous below, membranous and pilose above, where also the recurved sides become keeled. The second glume slightly exceeds the first and has its keel prolonged into a short awn scarcely 1 line long; the third is 3 lines long and encloses the pale with a ☿ flower; the fourth bears a geniculate awn 6–7 lines long, with a shorter brown column and a longer light upper part, it includes in the specimen examined a hyaline pale with an oval ovary. The first glume in the stalked

spikelet is oblique, the inner side being 1 line broad with 6 green anastomosing veins, and the outer nearly $\frac{2}{3}$ line with two stronger and two intermediate finer green veins; the keel bears in the upper third of its length a white membranous wing with a scabrid margin.

Gunong Leydang (Mt. Ophir). Nov. Growing on rock of Padang Batu.

Allied to the group of Australian and tropical Asiatic species, which comprises *I. muticum*, *triticeum*, *australe*, and *arundinaceum*; its perfect awn separates it from the three first, while it differs from *arundinaceum* in its leaf-characters, as well as in the more minute details of the spikelet.

Ischæmum magnum, sp. nov.—Planta robusta, sexpedalis, *culmis* erectis, superne modo ramosis, teretibus, lævibus, sub nodis glabris constrictis; *vaginis* internodos superantibus, quam laminæ $\frac{1}{3}$-duplo brevioribus, teretibus, superne carinatis et laxis, basi glabris, superne scabrido-villosis; *ligula* sæpe biauriculata, ciliolata; *laminis* longis, patentibus, inferne angustatis, plicatis et carinatis, tum sensim lineari-lanceolatis et planis, demum setaceo-acuminatis, supra glabris, infra sparse pilosis, costa media albo-lineata, utrinque nervis lateralibus sex vel pluribus dorso prominulis percursis; *racemis* crassis, binis, arcte appressis, culmum et ramos terminantibus, altero sessili, altero breviter pedicellato; articulis pedicellisque crassiusculis angulos tres acutos, quorum exteriori modo ciliolato, exhibentibus; illis quam spicula $\frac{1}{3}$, his 3-plo, brevioribus; *spicula sessili* oblonga, inferne flavescente, superne viridi; glumis glabris, Ima late lanceolata, inferne coriacea et dorso rugis transversalibus elevatis ornata, superne membranaceo-herbacea et nervis 3–5 viridibus anastomosantibus subindistincte notata, apice oblique obtusa, marginibus inferne revolutis, superne carinatis et scabridulis, carina exteriori (a spic. pedic. aversa) anguste alata; callo brevibarbi; IIda Iam subæquante, coriacea, dorso acute carinata, marginibus incurvatis superne anguste carinatis, sub apice apiculata minute scabridula; IIIia Ima breviori, hyalina, late lanceolata, acuta, trinervia, margine implicata paleam subsimilem cum flore 3-andro fovente; IVta hac breviori, ovata, hyalina, integra, tenuiter apiculata, trinervia paleam tenuem cum ovario fovente; antheris sub $1\frac{2}{3}$ lineis longis; *sp. pedic.* sessili $\frac{1}{4}$ breviori, gl. Ima oblique convoluta, margine utrinque carinata, exteriori ala viridi-membranacea, carinam superfusa, interiori nodulis tribus plus minusve distincte ornata; reliqua ut in sp. sess.

A coarse robust plant 75 inches high, unbranched for three-fifths of its length, the few long slender branches terminated by the paired subcompound racemes, 4–7 in. long, which are so closely appressed as to appear single. The terete polished internodes are covered by the longer sheaths, which, however, become laxer above; the sheaths are glabrous at the base, but increasingly scabrid and villous upwards; the ligule is strong and almost villous externally, 2–3 lines long, and forms laterally two triangular elongations of the sheath; the long blades are flat and lanceolate from a narrow plicate base and taper to an acuminate setaceous apex; below the

branches they are 15–19 in. long, and reach 7 lines in breadth; on the branches and the culm below the inflorescence shorter, and without the narrow base. The joints of the fragile rachis are 2½ lines long, and, like the pedicels of the stalked spikelets, thick, sharply triangular, and glabrous, except on the outer hairy angle. The sessile spikelet, with its short callus (⅔ line), is nearly 4 lines long, the callus has a beard less than half its own length; the stalked spikelet is a little shorter (3 lines), and its pedicel is 1 line long. In the sessile spikelet the lower half of the first glume is straw-coloured and bears several strong transverse ridges, the upper portion becomes thin and membranous, and is marked indistinctly with several fine anastomosing green veins. The third glume is nearly three lines long and includes a pale and male flower; the fourth, 2½ lines long, is entire, with a weak and shortly setose apex but no trace of an awn; it probably includes originally a ☿ flower, but only the fertilised ovary was present in the flowers examined. The outer glume of the stalked spikelet is somewhat oblique with a broad curled wing on the longer side turned away from the sessile spikelet; the incurved margins form strong keels on the inner surface. Blakan Mate, Singapore. J. B. Feilding, 1892.

Is closely allied to *I. rugosum*, resembling a large coarsely-growing form of that species with unawned spikelets. The difference in habit is so great that the two species would be distinguished at once. Thus while Hackel gives one metre as the extreme limit for the culms in *I. rugosum*, in *I. magnum* they are twice as tall, and unbranched for three-fifths of their length, not branching from the base as in the former species. The hairy sheaths and glabrous nodes also afford another distinction, while the racemes of the new species are more than twice the length reached in *I. rugosum*; similar differences are noticed in the details of the spikelets.

We have in the British Museum Herbarium a plant labelled "Malaya, G. T. Lay," which must evidently be included in the same species as the above, though differing slightly in its somewhat larger spikelets, with the outermost glume of the stalked spikelet slightly larger than that of the sessile, and also more broadly winged than in the type. The leaf-sheaths are glabrous, and the lanceolate blades start from a narrow base, the midrib forming a keel on the back for a short distance; in the upper leaves the base is rounded; the greatest width was 8 lines.

Note.—*Ischæmum rugosum* Salisb. is split up by Hackel (Mon. Andropog. pp. 206–8) into three varieties,—var. *α. genuinum*, var. *β. segetum*, and a third. Salisbury's type, a plant collected by Koenig and preserved in the British Museum, should, we presume, under this arrangement, be included under var. *α*. Hackel makes no reference to it, and probably never saw it. Comparison of the plant with the varietal diagnoses shows that it falls under var. *β.*, having the rachis-joints and pedicels ciliate, the callus of the sessile spikelet bearded and the awn perfect and about 20mm. long, with a glabrous twisted brown column and a whitish tortuous subula of about equal lengths; var. *α. genuinum*, on the contrary, is characterised by glabrous rachis-joints and pedicels, a shortly bearded or glabrous callus, and an imperfect awn 6–8 mm. long.

Andropogon pseudograya Steud. Kwala Indau, 50 ft.
A. squarrosus Linn. fil. Parit Jawa.
Themeda arguens Hack. Local name "Tali tudong rimau."
Rûmah Pasong (Police Station) Chohong. Nov.
Sporobolus elongatus Beauv. Kwala Indau, 50 ft.
Eleusine ægyptiaca Desf. Pulau Aor, 100 ft.
E. indica Gaertn. Kwala Indau, 50 ft.
Phragmites Roxburghii Kth.
Eragrostis pilosa Beauv.
E. unioloides Nees ex Steud. Fort, Johore Bhâru, Oct.
Centotheca lappacea Desv. Pulau Aor and Johore Bhâru.
Lepturus repens R. Br. Pulau Tinggi, 300 ft.
Bambusa cf. *vulgaris* Schrad. Bûkit Muar, 150 ft.

Mr. Feilding has also supplied a list of localities and the meanings of a few of the common Malay terms prefixed before place-names; these I append.

Muar. . .	N.W. Johore.
Johore Bhâru . .	Chief town; S. Johore.
Indau . . .	River boundary in N.E. Johore.
Pulau Tinggi . .	Island off E. coast.
,, Aor . .	Ditto ditto.
Chohong . . .	Malacca frontier, N.W. Johore.

Gunong means mountain; Bûkit, hill; Pulau, island; Kwala, mouth of river; Besar, great.

I have to thank Sir Joseph Hooker for his kind help in the determination of several doubtful Panicums. We shall look to the last part of the *Flora of British India* for clearer light on this difficult genus, and a considerable reduction in the number of names.

ARTEMISIA STELLERIANA Bess. IN IRELAND.

By Nathaniel Colgan.

Readers of this Journal must feel indebted to Prof. Areschoug for the very interesting discussion on the distribution of this species given in last month's number, and I congratulate myself on the fact that the short note in which I announced what appears to have been its first discovery in Ireland has had the happy effect of securing for English botanists a paper so suggestive and full of research. The difficulties in the way of accounting for the introduction of the Kamtschatkan *Artemisia* to the coast of Southern Sweden—assuming it to have been introduced—are apparently very serious. It is otherwise, however, in the case of the Irish station on the North Bull; and before the appearance of Prof. Areschoug's paper it had not occurred to me to weigh very carefully the conflicting claims of the many possible modes of its accidental introduction to this locality. But his paper has given quite a new interest to the plant, and has stimulated me to further inquiry into the origin of its settlement in the Co. Dublin.

If it could be shown that *Artemisia Stelleriana* was a free-growing species, and was, or had been, cultivated in the neighbourhood of the North Bull, there would clearly be a strong presumption that it had somehow escaped to the sand-hills from its place of cultivation. A couple of letters, one to Mr. Thomas Smith, of the Daisy Hill Nursery at Newry, where I was informed the plant was under cultivation, another to Mr. Charles Smith, in charge of Lord Ardilaun's gardens at Saint Anne's, Clontarf, distant about a mile in a straight line from the sand-hills station, set both these points at rest. I can hardly do better than quote freely from these letters. "I cannot remember," Mr. Smith writes from Newry, "from whom I originally obtained *Artemisia Stelleriana*. I think it was from some continental nursery; but that is fifteen years ago or more. It was introduced as a white-foliaged bedding plant, and was widely distributed for that purpose. It is a plant of the freest possible growth. Any bit of the top or rootstock swept out with refuse would be sure to grow. I have not noticed any seedlings; but this proves nothing, inasmuch as in nurseries the constant hoeing prevents their becoming established. Nothing seems to stop its growth. In one instance it has gone half-way across a bed of mint. Tops have often been used for mixing with cut flowers, and may have assisted in the make-up of breast-bouquets, which, worn by some visitor to the North Bull, may have been thrown away as withered, and have got covered with sand, and the whole matter is at once accounted for." This extract shows how aggressive a plant the Kamtschatkan *Artemisia* is, and to what a slight and unregarded incident we may without any reckless use of the imagination attribute its settlement on the North Bull.

In the second letter, from Mr. Charles Smith, of Saint Anne's gardens, we find ample materials for another and perhaps more satisfactory theory. "I had *Artemisia Stelleriana* here," the letter runs, "for many years. We generally called it the 'Siberian Wormwood.' I cannot recollect where I procured my first plant. I think it is as many as twenty years since. At the time of the rage for carpet-bedding I used it extensively, it being very easy to train in all shapes and keep dwarf. It may perhaps be ten years since I discarded it. We often carted a great deal of our rubbish down to the foreshore, and I am not at all surprised to hear of its being discovered on the North Bull, as I have picked it up several times on our farm, where I have no doubt pieces had got into the manure-heap from the garden-refuse. The species was most aggressive, growing anywhere a piece got on the ground." The foreshore here mentioned, to which the garden-refuse of Saint Anne's was carted, is the inner shore of the "muddy creek a quarter of a mile in width" spoken of in the January number of this Journal as separating the North Bull from the mainland.

It is hardly necessary to fill up, as anyone may, from the materials given in the letter just quoted from, an alternative theory to that of the withered breast-bouquet. A few scraps of the *Artemisia*, probably fragments of creeping rootstock, are shot out with other garden rubbish on the foreshore at low tide, the

rising water floats them off, and a westerly breeze driving them across the narrow channel leaves them stranded on the low shores of the North Bull as the tide ebbs. Then the fragments, with vital powers noways impaired by a few hours' immersion, are swept by the winds across the smooth, low, sandy tracts, until finally arrested by the fringe of *Psamma* along the outer or sea-edge of the bank they are rapidly buried there under drifting sand. A rain-shower or two, a few days of genial warmth, and the aggressive vitality of the plant do the rest; and the stranger from the remote Kamtschatkan peninsula has fairly established a colony on the shores of Ireland.

Has *Artemisia Stelleriana* a future before it in Western Europe, or is it doomed to succumb in its struggle with the natives? We can hardly hazard an answer to this question until we learn whether it has succeeded in making good its footing in other parts of the British Isles; but this much seems tolerably clear, that on the North Bull it has held its own for some ten years, and has somewhat extended its range. For if its first settlement here was derived from Saint Anne's, as there is every reason to suppose it was, it cannot have reached the sand-hills later than the year of its expulsion from the gardens, unless we assume it to have first established itself at some intermediate point. For such an assumption there is at present no evidence; and if it should be objected that a plant so long established must have been earlier observed by botanists, I can only refer to the reasons so well pleaded by Prof. Areschoug in meeting a similar objection in the case of the Skanian station. On further inquiry, moreover, I find that the first discovery of the plant on the North Bull must be referred to a date a year earlier than that given at p. 22, *i. e.*, to 1891, and not 1892. It was in the former year that Miss A. G. Kinahan first found the plant in vigorous growth on the sand-hills, and took cuttings for her garden, a year before Mr. C. B. Moffat had noted it at a point three hundred yards distant.

MIDDLESEX MOSSES.

By John Benbow, F.L.S.

The list of Mosses appended to the *Flora of Middlesex* is so deplorably meagre that any addition to it is to be welcomed; indeed, the following contribution, though small enough, amounts to about one-third of the number at present recorded. The species enumerated below were all, with one exception, collected in the extreme north-west angle of the county, between Uxbridge and the junction of the Herts and Bucks boundaries at Springwell, a strip of about seven miles in length, and from one to two miles in breadth. It is much to be wished that other districts were similarly searched by local collectors, in which case it is reasonable to infer that the list would be still further and materially enlarged. I am greatly

indebted to Mr. J. E. Bagnall for his kind assistance, and for naming the more critical species.

Archidium alternifolium Dicks. Ruislip Reservoir.
Sphagnum intermedium Hoffm. Hampstead Heath.
Gyroweissia tenuis Schrad. Canal-walls nr. Harefield Moor.
Dicranella rufescens Turn. Chalk-pits, Harefield and Springwell.
Dicranum flagellare Hedw. Ruislip Woods (April, 1892).
Campylopus flexuosus Brid. Ruislip Woods.
Seligeria calcarea B. & S. Chalk-cliffs, Harefield.
Trichostomum tophaceum Brid. Uxbridge, Harefield, Canal-walls, Garret Wood, &c.
Barbula stellatum Schreb. Chalk-pit, Harefield.
B. ambigua B. & S. Harefield.
B. aloides Koch. Harefield.
B. revoluta Schwæg. Ickenham, Ruislip, Canal-walls.
B. convoluta Hedw. Harefield, Canal-walls.
B. lævipila Brid. Frequent.
B. latifolia B. & S. Frays Meadows, Uxbridge.
B. papillosa Wils. Frays Meadows, Uxbridge.
Zygodon viridissimus Dicks. Frequent.
Webera albicans Wahl. Canal-walls and banks.
Bryum inclinatum Swartz. Uxbridge, Ickenham, Northwood.
B. bimum Schreb. Canal-walls, Ruislip Reservoir, &c.
B. pallens Swartz. Ruislip, Northwood.
Polytrichum formosum Hedw. Frequent.
Anomodon viticulosus L. Ickenham, Harefield, Springwell.
Climacium dendroides W. & M. Uxbridge, Ruislip Reservoir, Swakeleys.
Brachythecium salebrosum Hoffm. Copse, Uxbridge Common. Park Wood, Swakeleys.
Eurhynchium speciosum Brid. Lake in Swakeleys Park. Frays Meadows, Uxbridge.
E. Swartzii Turn. Frequent.
Rhynchostegium tenellum Dicks. Harefield, Springwell.
R. megapolitanum Bland. Sandy banks between Highway Farm and Harefield.
R. murale Hedw. Uxbridge, Ruislip, Harefield, Garret Wood (on stones).
Hypnum Somerfelti Myr. Harefield, Springwell.
H. chrysophyllum Brid.* Harefield, Springwell.
H. exannulatum Gümb. Northwood, Ruislip Common and Reservoir.
H. filicinum L. Canal-walls and banks, Pield Heath, &c.
H. resupinatum Wils. Ruislip Woods, Garret Wood, Harefield.

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* *H. chrysophyllum* is included in Dr. Trimen's *Flora*, said to have been found at Hampstead by Mr. J. E. Bagnall, "who showed specimens at the Birmingham Nat. Hist. Soc. 1868." Mr. Bagnall assures me that the specimens thus referred to were collected at Hamstead, in Staffordshire.

RUBUS GELERTII AND SOME OF ITS ENGLISH FORMS.

By Edward F. Linton, M.A.

A Norfolk bramble, which varies to some extent in the district where I first knew it, was sent to Dr. W. O. Focke on different occasions in two of its forms, and stated by him to be "*R. Gelertii* Friderichsen," or "near *Gelertii*," or "between *Gelertii* and my *Banningii*." The forms were (1) a more glabrous plant, in which stronger prickles and acicles were developed; (2) a very hairy plant, in which the acicles are few and weak, and almost reduced to stiff glandular setæ; and (3) a copse plant, with moderately hairy stem, and many weak glandular setæ. Probably No. 3 is a woodland form of No. 2, and may be put on one side.

A fresh gathering of (2), from two different localities, made this last summer, went to Mr. O. Gelert, who tells me that "these forms have a great resemblance to *R. Gelertii*, and really only diverge in the dense hairiness, weaker armature, and pink flowers." Now the more glabrous plant (1) differs from (2) precisely in these respects, and, what is more, agrees admirably in all points with the excellent specimens of *R. Gelertii* which Mr. Friderichsen has sent me. We have therefore the type in Britain, from Mousehold Heath and from Beeston St. Andrew, both in the neighbourhood of Norwich. I have it also, I think, from Polstead Marsh, Suffolk E., collected by the Rev. J. D. Gray; but the material is not sufficient for certainty. Here is a description of the species, taken from Mr. Friderichsen's own account of it, with aid from authentic specimens:—

R. Gelertii Friderichsen. Stems arcuate-procumbent, or climbing amid bushes, hardly sulcate, subglabrous, with few setæ and many long straight prickles narrowed from a compressed dilated base; leaves rather thick, thinly hairy and glabrescent above, grey hairy subtomentose beneath, with sharp irregular teeth, quinate-digitate; leaflets all petioled, terminal ovate-elliptic, truncate or subcordate at the base, acuminate; panicle leafy beyond the middle, eventually pyramidal, with a rounded top, its branches shortly matted with hair, erect-patent, more or less glandular and setose; prickles straight, deflexed a little or patent; sepals deltoid, acuminate, reflexed, densely hoary tomentose, more or less setose; petals ascending, white; fruit glabrous.

The second E. Norfolk plant (2), which occurs in hedges in Sprowston and in Beeston St. Andrew, near Norwich, in some quantity, and which I propose to call var. *criniger*, is distinguished by its densely hairy stem, which is thinly glandular-setose; rachis and panicle-branches more densely hairy, with numerous slender acicles and glandular bristles intermixed; sepals like the type, but with more loose silky pubescence; petals pale pink or white, and fruit hairy. I have gathered var. *criniger* also in W. Norfolk, on Lexham Heath, where, however, it had white petals; the colour of the flowers is not a feature on which much stress can be laid in brambles.

A Cheshire plant, which Capt. A. H. Wolley Dod has gathered for some two or three seasons, and of which he kindly sent me specimens for inspection, must be placed here; and the Rev. W. M. Rogers so entirely agrees with my suggestion that he combines it with my var. *criniger*, from which it scarcely differs in any other characters than the less hairy stem with a greater abundance of glandular bristles and acicles.

There are other forms connected with *R. Gelertii* which may have to be placed under it; but I restrict myself in this notice of the species to those forms which I have myself seen growing.

BIBLIOGRAPHICAL NOTES.

IV.—Henry Mundy and the Shamrock.

While engaged in collecting material for a paper on the earlier literature of the Shamrock, I happened to light on the following paragraph in the first edition of Linnæus's *Flora Lapponica* (p. 221):—"Hiberni suo Chambroch, quod est Trifolium pratense purpureum, aluntur, celeres et promptissimi roboris. *Mund. diæt.* 125. conficiunt enim panem e floribus hujus plantæ melleum odorem spirantibus, qui magis placet, quam qui ex Spergula paratur."

As the opening sentence in this passage agrees almost *verbatim* with John Ray's account of the Shamrock in his *Historia Plantarum* (i. 944), and this work is amongst those used by Linnæus in the preparation of his Lapland Flora, it seemed at first sight tolerably clear that the great Swede had borrowed directly from his English precursor. But the reference, "*Mund. diæt.* 125," apparently pointed to some other source, while the circumstantial details as to the process of making bread from the clover flowers "breathing a honeyed odour" were undoubtedly not drawn from the English writer, nor indeed from any other of the earlier herbalists and botanists and historians who make mention of the Shamrock. All efforts, however, to discover the work or author referred to by this mysterious *Mund. diæt.* were in vain.

I was on the point of abandoning the search, when it was suggested to me by my friend Mr. A. G. More that I should appeal for aid to Prof. Fries at Upsala. He at once sent me a courteous reply, fully clearing up the difficulty, and furnishing me with a valuable bibliography of the work quoted by his illustrious predecessor in the Upsala chair of Botany. Henry Mundy is the writer referred to by Linnæus under the contraction "*Mund. diæt.* 125"; and the passage cited is from page 125 of the Frankfurt (1685) edition of his work: *Commentarii de Aëre vitali, Esculentis ac Potulentis* (Oxford, 1680). This work appears to be largely a treatise on vegetable foods, and Mundy, from the tenour of the passage on p. 125, kindly transcribed for me *in extenso* by Prof. Fries, seems to have been an ardent vegetarian. Opening with a

reference to the simple vegetable diet of the primitive ages, and quoting from Ovid the lines on the happy Golden Age, with its food of Arbutus berries, Mundy continues thus:—

"Et ita reverā fuit, siquidem morbis, vitiisque caruit quæ nostræ politiori ætati luxuria in cibus intulit. Parum sanè esset id genus victus nisi quod aliud adhuc non noverant: sed non erat insalubre & vescentibus alimentum benignè suppeditabat. Et homines eo solo uti coacti, non minus quam alii lautè viventes vegeti esse & torosi observantur. Sunt item Hiberni, qui suo Chambroch (quod est trifolium pratense purpureum) aluntur, celeres et promptissimi roboris.

"Sic animalia quibus maximæ vires et moles, equi, boves, elephanti, herbaceo tantum pabulo nutriuntur, nec aliā Saginā pinguescunt. Unde nonnulli colligunt, herbaceos cibos jumentis tantum relinquendos: sed errant; comprobavit enim experientia esse magis secundum naturam humanam boum more, quam luporum, vivere, oleribus subinde quam carnibus semper vesci."

Though Mundy's book seems to have achieved a high popularity soon after its publication—two editions having issued from Oxford (1680 and 1685), one from London (1681), one from Frankfurt, that quoted from by Linnæus, in 1685, another from Leyden in the same year, and a pirated edition, as Prof. Fries informs me, from Hanover in 1687, under an altered title and with a disguised author's name,—very little now seems to be known about Henry Mundy beyond what we can gather from the title-page of the Frankfurt edition of 1685, where the author is described as a famous Oxford physician. As the Editor of this Journal has pointed out (*Journ. Bot.* 1889, 262), Kunth, according to Pfeiffer (*Nomenclator*, ii. 370), dedicated his genus *Mundia* to "Henr. Mundio, Oxoniensi," so that Kunth would appear to have known of Mundy, and thought his name worthy of perpetuation.

In Mundy, at all events, we have a new authority on the Shamrock, the original from which Ray as well as Linnæus must have drawn, for though Ray attributes his knowledge of the Irish use of the *Trifolium pratense* as food to his constant correspondent, Dr. Tancred Robinson, there can be no doubt that Robinson merely transcribed the passage from one of the three editions of Mundy's book which appeared before the publication of Ray's *Historia Plantarum*.

NATHANIEL COLGAN.

Mr. W. A. Clarke sends the following:—"'Henry Munday, son of Henry M., born at Henley, in Oxfordshire, became one of the portionists of Merton Coll. in the beginning of the rebellion, took one degree in arts in 1647, and 'kept pace with the interrupted times to enjoy some petit employment.' In 1656, May 20, he was elected master of the free grammar school at Henley. 'At length, following the practice of physic, it fell to decay, and had not death prevented justice, he would have been ejected.' He hath written and published Comm. de Ære vitali, &c., Oxon. 1680 [Bodl. 8o. D. 23. Med.] Lugd. 3, edit. 1685. He died by a fall from his horse on his return to Henley from the house of John Lord

Lovelace at Hurley on 28 June, 1682, aged about 58, buried in north chancel of Ch. at Henley.'—Wood's Athenæ, ed. Bliss, iv. 49. In *Alumni Oxon.* he is called 'Henry Mundey, s. Henry, of Henley, Oxon, pleb. Corpus Christi Coll. matric. 20 May, 1642, aged 15; post-master Merton Coll., B.A. 2 April, 1647.' This would make him 55 only at death; but no doubt both refer to the same man. The same date of death is given in both places."

FIRST RECORDS OF BRITISH FLOWERING PLANTS.

COMPILED BY

WILLIAM A. CLARKE, F.L.S.

(Continued from p. 18.)

Veronica spicata L. Sp. Pl. 10 (1753). **1660.** "In severall closes on Newmarket heath."—R. C. C. 174.

V. hybrida L. Sp. Pl. 11 (1753). **1650.** "Found at S. Vincents Rocke by Mr. Goodyer."—How, Phyt. 128. "Ad latera montis cujusdam Craig Wreidhin dicti, in comitatu montis Gomerici Walliæ. D. Lloyd."—Ray, Syn. i. 119 (1690).

V. officinalis L. Sp. Pl. 11 (1753). **1548.** "Veronica groweth in many places of England."—Turn. Names, H v.

V. Chamædrys L. Sp. Pl. 13 (1753). **1570.** "Teucrium pratense. Ang. Wilde Germander."—Lob. Adv. 209. "In many places about London in medowes and fertill fields."—Ger. 531 (1597).

V. montana L. Sp. Pl. ed. 2, 17 (1762). **1663.** In Cambs ("Chamædrys spuria foliis pediculis oblongis insidentibus").—R. C. C. App. i. 4. "In Ericeto Hamstediano ("Alyssum Mont. Columnæ").—Merrett, 6 (1666).

V. scutellata L. Sp. Pl. 12 (1753). **1641.** "Anagallis aquatica 4ta Lob. . . . in uliginosis."—Johns. Merc. Bot. pars alt. 15. "On Teversham moor near Fulborn" (Cambs).—R. C. C. 11 (1660).

V. Anagallis L. Sp. Pl. 12 (1753). **1629.** "Anagallis aquatica angustioribus foliis flo. albidis."—Johns. Kent, 10.

V. Beccabunga L. Sp. Pl. 12 (1753). **1548.** "It groweth in water sydes . . . Brooklem."—Turn. Names, ci, back.

Euphrasia officinalis L. Sp. Pl. 604 (1753). **1568 ?** Fig. and desc. Turn. Herb. iii. 30. "In dry medowes, in greene and grassie waies, and pastures standing against the sunne."—Ger. 537 (1597).

Bartsia Odontites Huds. ii. 268 (1778). **1597.** "In fertill pastures and bushie copses."—Ger. 85 ("Cratægonon Euphrosyne").

B. viscosa L. Sp. Pl. 602 (1753). **1670.** "Primo observavi circa oppidum S. Columbi, & deinceps in Occidentalioribus Cornubiæ plurimam."—Ray, Cat. 108. [? "Cratæogonum cubitalis altitudinis flore luteo. In the Isle of Wight, Mr. Cole, and in the

King's meadows at Godstone in Surrey."—Merrett, 31 (1666). The Wight plant may have been this (see Fl. Vect. 362).]

B. alpina L. Sp. Pl. 602 (1753). **1670.** "Propè Orton in Westmorlandia, juxta rivulum qui decurrit secus viam quâ indè Crosbeiam itur."—Ray, Cat. 86.

Pedicularis palustris L. Sp. Pl. 607 (1753). **1597.** "Within verie moorish medowes they grow a cubite high or more, but in moist and wet heathes, and such like barren grounde, not above an handfull high."—Ger. 913. "Two miles East of Croydon below the windmill nigh the fish pond."—Merrett, 91 (1666).

P. sylvatica L. Sp. Pl. 607 (1753). **1597.** Ger. 913. The latter part of Gerard's description (see above) refers to this.

Melampyrum cristatum L. Sp. Pl. 605 (1753). **1660.** "In Madingley and Kingston woods and almost in all woods in this County [Cambs.] plentifully."—R. C. C. 95.

M. arvense L. Sp. Pl. 605 (1753). **1724.** "In the corn on the right hand just before you come to Lycham in Norfolk; Mr. J. Sherard."—Ray, Syn. iii. *286.

M. pratense L. Sp. Pl. 605 (1753). **1570.** "In sylvosis collibus & devexis umbrosis Angliæ."—Lob. Adv. 11. "Hampstead Heath."—Ger. 84.

M. sylvaticum L. Sp. Pl. 605 (1753). **1777.** "In woods, but not common."—Lightf. Fl. Scot. 325. "On the road going from Taymouth to the hermitage, July, 1775."—Herb. Lightf.

Rhinanthus Crista-galli L. Sp. Pl. 603 (1753). **1597.** "It groweth in drie medowes and pastures, and is to them a great annoiance."—Ger. 912.

R. major Ehrh. Herb. 56 (1789) **1724.** "The first time I met with this Plant, was within a Mile of Burrowbridge [Yorksh.] amongst the Corn in the wayside from Knaresborough thither. I also observed it this year 1723, amongst the Corn nigh West Newton, in Northumberland."—Dill. in Ray Syn. iii. *284.

Orobanche purpurea Jacq. Enum. Vindob. 252 (1762). *O. cærulea* Vill. Fl. Dauph. ii. 406 (1787). **1797.** "A single specimen was found in 1779 by a Mr. Scarles near Northreps [Norfolk], and several more last year near Sheringham by Mr. W. Skrimshire."—E. B. 423. In Linn. Trans. iv. 182, and in With. Arr. ed. 3, 558, the first finding is ascribed to Mr. Pitchford. But see Ger. em. p. 228, and Townsend's Fl. Hants, p. 241.

O. major Sm. E. B. 421 (1797). **1548.** "I never sawe it in al Englande, but in Northumberlande, where as it was called newe chappel floure."—Turn. Names, E viij. See also Herb. ii. 71, back.

O. rubra Sm. E. B. 1786 (1807). **1807.** "Discovered by John Templeton, Esq. . . . . at Cave-hill, near Belfast, in August, 1805."—E. B. 1786.

O. caryophyllacea Sm. in Linn. Trans. iv. 169 (1798). **1829.** Found by Rev. G. E. Smith in various localities near Folkestone, Kent.—G. E. Smith, Phæn. Pl. S. Kent, 34.

O. elatior Sutton in Linn. Soc. Trans. iv. 178 (1798). **1660.** "In barley on the right hand of the way between Cambridge and Grantchester."—Ray, C. C. 110. See Sutton, *l. c.*, and Babington, Fl. Cambs. 162.

O. Picridis F. Schultz in Koch Deutsch. Fl. iv. 453 (1846). **1848.** Found by Rev. W. W. Newbould in 1848 near Comberton, Cambs.—Ann. & Mag. N. H. ser. 2, ii. 149.

O. Hederæ Duby, Bot. Gall. i. 350 (1828). **1782?** There can be little doubt that this is the plant referred to by Curtis (Fl. Lond. fasc. iv. t. 44 (1782?):—"Mr. Thomas White once related to me his having observed a small Orobanche growing on walls, &c., in Pembrokeshire, and that the decayed floor of an old castle in particular was almost covered with it." It was, however, first distinguished as British by Babington in E. B. Suppl. t. 2859 (1841), where various stations are cited for it.

O. minor Sm. E. B. 422 (1797). **1724.** "O. flore minore—found by Mr. Rand in a field of oats two miles beyond Rochester."—Ray, Syn. iii. *288.

O. amethystea Thuill. Flor. Paris, ed. 2, 317 (1799). **1845.** Discovered by Rev. C. A. Johns, Rev. W. S. Hore, and T. Edmonston at Whitsand Bay, Cornwall, on *Daucus maritimus*.—Phytol. ii. 239.

Lathræa Squamaria L. Sp. Pl. 606 (1753). **1597.** "I found it growing in a lane called East lane, upon the right hande as yee go from Maidstone in Kent unto Cockes Heath," &c.—Ger. 1388.

Utricularia vulgaris L. Sp. Pl. 18 (1753). **1641.** "Millefolium palustre galericulatum, Ger."—Johns. Merc. Bot. pars alt. 26. "About Oxford."—How, Phyt. 76 (1650). But see Ger. 679, Park. 1258, &c.

U. neglecta Lehm. Ind. Schol. Hamburg, 38 (1828). **1867.** "Collected by the late Edward Forster in a gravel pit in Henhault Forest, Essex."—Journ. Bot. 1867, 73. See Journ. Bot. 1876, 142.

U. minor L. Sp. Pl. 18 (1753). **1677.** "Millefolium palustre galericulatum minus flore minore."—Ray, Cat. ed. 2, 200 (no locality). "Found by Mr. Dent on Teversham Moor, in Cambridgeshire."—R. C. C. App. ii. 13 (1685).

U. intermedia Hayne ap. Schrad. Journ. (1800), 18. **1812.** "Found by the late Dr. Scott near Dublin, and by Miss Hutchins in the west of Ireland."—E. B. 2489.

U. Bremii Heer. **1876.** "Moss of Inshoch, Nairnshire. Mr. Jas. B. Brechan [Brichan], 16 Aug. 1833." See Journ. Bot. 1876, 142.

Pinguicula vulgaris L. Sp. Pl. 17 (1753). **1597.** "Groweth in our English squally wet grounds . . . especially in a field called Cragge close, and at Crosby Ravenswaith in Westmerland," &c.—Ger. 645.

P. grandiflora Lam. Dict. iii. 22 (1789). **1810.** "Found plentifully in marshy ground in the west part [of County Cork] by Mr. [James] Drummond."—E. B. 2184.

P. alpina L. Sp. Pl. 17 (1753). **1832.** "Picked by the Rev. George Gordon in June, 1831, in the bogs of Auchterflow and Shannon, Ross-shire. . . . . There are two specimens in the herbarium of Sir J. E. Smith, sent to him by Mr. James Mackay, in Sept. 1794, from the island of Skye."—E. B. Supp. 2747.

P. lusitanica L. Sp. Pl. 17 (1753). **1666.** "In the midway betwixt Oakhampton and Lanceston, Cornwall . . . . in boggy

Meadows."—Merrett, 94. "In Cornwall about Kilkhampton and elsewhere."—Ray, Cat. 244. Found by Ray in 1662 (Iter iii.).

Verbena officinalis L. Sp. Pl. 20 (1753). **1548.** "Vervine . . . . groweth in many places of Englād."—Turn. Names, G vij (under Verbenaca).

(To be continued.)

SHORT NOTES.

ARABIS PETRÆA Lam. VAR. GRANDIFOLIA Druce.—In this Journal for 1893, p. 65, Mr. Beeby, in a paper headed "Our Endemic List," disposes of some of the plants I had named as probably endemic in Dr. A. R. Wallace's *Island Life*, ed. 2. I have now to deprive another of that position. In the *Botanical Exchange Club Report* for 1888 (p. 199), 1889, Mr. Druce describes a variety of *Arabis petræa* as var. *grandifolia*. In *Island Life* Sir J. D. Hooker remarks, "The larger flowers alone distinguish this." Among a series of Siberian plants recently sent me by Herr Meinshausen, of St. Petersburg, I find two sheets of specimens that are exactly Mr. Druce's plant, named "*A. petræa* Lam. var. *ambigua* Regel." So far as I can ascertain, Fries was the first to publish it as a variety in the 3rd *Mantissa*, p. 77 (1842), it having previously been described as a species by DeCandolle (*Systema*, ii. p. 231 (1819)). The description by Regel is contained in his *Plantæ Raddeanæ*, p. 166, tab. 5, figs. 8, 9, 10 (1861). Fries gives only one locality for it in Sweden. Kjellman (Vega Exped.) found it on the Asiatic coast at Konyam Bay. Banks of the Lena (Müller & Czekanowski!). River Kolyma (Trantvetter); Taimyr (Middendorf); Jenesi (Schmidt); Amur (Radde); Kamschatka (Rieda, Regel, *l. c.*). In America:—Island of Ounalashka (*A. ambigua intermedia* Chamisso et Schld., Linn. i. p. 16 (1826). Probably at Yale, Brit. Columbia; Macoun, Cat. Canad. pl. 1, p. 42. Selkirk Mts., Brit. Columbia; Aloska; Macoun, *l. c.* 2, p. 486. *A. ambiguum* Bongard, Veg. ins. Sitka, p. 125 (1831), is, according to Fries, *A. lyrata* L. Sp. Pl. 1, p. 665 (1753). Regel has a "lusus β. grandiflora Led. p. 120," but Ledebour only says (Fl. Ross. 1, p. 120 (1842)), "β. floribus majoribus"; Regel describes this as "foliis caulinis glabris v. apice barbulatis, petalis ¼–⅜ poll. longis."—ARTHUR BENNETT.

COCHLEARIA GROENLANDICA L. IN CAITHNESS.—Having occasion to turn over my sheets of *C. danica* L., I have found a specimen of the above, gathered on July 5th, 1886, during an evening stroll along the cliffs S. of Wick, in company with Messrs. Grant and Hanbury. The companion-specimen is, I believe, true *danica*. They occurred on muddy ground among the rocks, in company with *Glyceria distans*, &c.—EDWARD S. MARSHALL.

HERMAPHRODITE HAZELS.—Last year I recorded (*Journ. Bot.* p. 153) the finding of hazels near Stonyhurst, in Lancashire, bearing pistils in some of the flowers of the male catkins. I now

find, near St. Asaph, N. Wales, precisely the same phenomenon. A healthy plant, already in good bloom, attracted my attention in January by a peculiar contraction of the lower half of many of its unopened catkins. In these the contracted part consisted of hermaphrodite flowers; in some other cases the whole catkin was hermaphrodite. An examination of several catkins shows that the greater number (over 70 per cent.) of the abnormal flowers contain *one style* surrounded by either *four* or *six stamens*, or more correctly half-stamens. In a few there were *five* or *seven* or even *eight* stamens; and the *styles* in the less developed flowers nearest the base of the catkins sometimes numbered as many as *four*. In two flowers, along with seven normal stamens, there was an eighth abortive one, its upper half being converted into a style. The abnormal flowers seem to be quite barren. There is no appearance of an ovary, and the styles wither up before the bursting of the anthers. It is well known that bisexual catkins are occasionally found in species of *Salix*, *Populus*, *Castanea*, and other monœcious and dicœcious plants; and Dr. Bail (*Bot. Zeitung*, 1870, 400) records the occurrence of pistils in the male flowers of hazel as not uncommon; I have found them, but less abundantly, on two other plants in this neighbourhood, as well as in Lancashire. A more extraordinary phenomenon is that recorded by M. Léon Wehrli, of Zürich, who discovered, near Aarau, in Switzerland, and has fully described and figured in *Flora* for 1892 (pp. 246–264), a hazel in which all the male catkins are completely metamorphosed into abnormal pistillate catkins. M. Wehrli also gives a careful summary of the literature bearing on this subject, and of recorded instances of interchange of pistils and stamens during the last century and a half.—C. A. Newdigate.

Eleocharis acicularis (*Journ. Bot.* 1893, pp. 309, 371; 1894, pp. 54, 87). — No doubt the long-stemmed submerged form of this plant, referred to by Babington and Syme, and also in Mr. Bennett's note as filling up a ditch to the exclusion of everything but *Nuphar*, might easily be confounded with submerged forms of *Juncus supinus*, as suggested by Mr. Beeby. But I have never observed the *Juncus* growing with short leaves of a uniform length of two to four inches, as does the form of *Eleocharis* to which I have referred. Only a fortnight ago I gathered many young plants of *J. supinus* thrown up from deep water on the margins of a tarn in the Mourne Mountains. The capillary pale green leaves much resembled *E. acicularis*, but even in very young plants some of them were six inches in length. I have looked at my specimens again, and have no doubt they are *E. acicularis*. Probably, as Mr. Bennett remarks, this is the forma *submersa* Hj. Nilss.; it certainly might easily be mistaken for *S. parvulus*, as Norman suggests. Mr. Linton's Surrey plant seems to be the same as the Irish one. But can the term "leaves" be substituted for "stems" when the species is barren? — R. Lloyd Praeger.

Trifolium Molinerii Balb. in W. Suffolk.—A specimen gathered some years ago, in a sandy field near Brandon, taken at the

time for an albino form of *T. incarnatum*, and unnoticed since, I detected lately in working my trefoils as *T. Molinerii* Balb. The plant had the habit of the former, but I see that my specimens of *T. Molinerii* from three localities in France have the same habit; so the decumbent growth of it in Cornwall may be, and probably is, due to situation. The Suffolk specimen is very probably a casual, perhaps introduced with foreign seed; as far as I remember, there was no *T. incarnatum* with or near it. Dr. Hind, in whose company I was at the time, clearly recollects the occurrence, and has my plant entered for Brandon in his *Flora of Suffolk*, but is not aware of any other case of *T. Molinerii* being found in the county. The district, however, is one in which trefoils have a hard battle for existence with the rabbits, unless they can flower and fructify prostrate on the ground.—EDWARD F. LINTON.

ERRATUM.—P. 87, l. 17 from bottom, for "Charlton," read "Cuxton."

NOTICES OF BOOKS.

Monographiæ Phanerogamarum, A. et C. DeCandolle Vol. VIII. *Guttiferæ*, auctore JULIANO VESQUE. Paris: G. Masson, Dec., 1893.

THE new volume of this work is a new departure. It is dedicated by the author to the memory of Alphonse DeCandolle; and it appears, from a short note of preface by M. Casimir DeCandolle, that his father had accepted this novel form of monograph.

We have seen indeed the "anatomische methode" in Engler's Jahrbuch and other German publications invading purely systematic work; but here we have it introduced fully, at one bound, into the DC. Monographies. Another novelty introduced by M. Vesque is the space given to the discussion of the affinities of species upon speculative views of their line of descent; thus the "Histoire" (in French) prefixed to the genus *Garcinia* occupies 26 pages.

The order Guttiferæ is understood exactly as in Benth. et Hook. f. Gen. Pl. v. 1, p. 167, except that the aberrant genus *Quiina* is excluded (I do not notice that M. Vesque instructs us to what order he would transfer *Quiina*). The genera are arranged on the same principles in the same tribes and are given the same limits; no new genus is proposed. About ten new species only are proposed, but several other species were only previously known from Vesque's *Epharmosis*. For the species, M. Vesque had the advantage to follow the monograph of Planchon and Triana, and (as to the Asiatic genera) the fine work of Pierre.

M. Vesque's monograph is substantially strictly conservative, and makes therefore a very convenient compilation of the genera and species brought up to date, though its form is rather startling at first. He has departed widely indeed from the standard set by Alph. DC. in the first vol. of these Monographies.

After the description of one of the larger genera, as *Garcinia*, comes a Conspectus of the Sections; then follows a "Conspectus

Specierum," which for *Garcinia* occupies 28 pages. This "conspectus" contains in fact the diagnoses of Alph. DC.'s meaning. The Conspectus Specierum is not of much use, however, for rapidly guiding the way to a species, as the bifurcatory characters given are largely anatomical,—to get to the group which contains our unknown species we require (often) to know the form of the stomata, the number of layers of cells in the mesophyl or the intimate structure of the epidermis.

Next come the species. The name of the species is followed by a (not complete) synonymy (for the diagnosis we must refer back to the Conspectus). After the synonymy come geography (very shortly done); then the description, frequently nearly a page, in Latin; the first part of this gives a description of the vegetative parts; the second, often ten or twelve lines, gives the anatomic description of the leaf; the third describes the inflorescence, flowers and fruit. The account of the species is concluded by "remarks," in French, frequently lengthy, sometimes rather watery.

I have tried to test the *form* (first) of this work, and as my knowledge of the American species is exceedingly small, I commenced at the third tribe "Garcinieæ," p. 251. The first genus is "xxi. *Garcinia*," which stands thus without the name of its author, or any reference whatever; it should mean "*Garcinia* Vesque," but on turning back to p. 27 and comparing the standard form adopted by Vesque, it seems that the whole synonymy of the genus *Garcinia* (180 species) has somehow slipped out. It is true that an incomplete set of references is given, p. 254, for the subgenus *Xanthochymus*, but none is given for the other subgenera (pp. 258, 259, &c.). It is still more unfortunate that, though Vesque depends mainly on Pierre's excellent monograph and plates of the difficult genus *Garcinia* (indeed, it is a chief merit of Vesque's work that he has followed Pierre so closely), there is no citation or acknowledgment of Pierre's *Garcinia* under the genus *Garcinia* (nor indeed under the order Guttiferæ, nor indeed under the suborder Garcinieæ). The slip of all the heading of the genus *Garcinia* and of all acknowledgment of Pierre is, however, clearly only a slip,—though an awkward one.

I then proceeded to look up the first few species of *Garcinia*. The first species stands thus:—

"1. G. SPICATA Hook. f.; Pierre *Fl. Forest*;

"Vesque *Epharm.* ii. t. 89, 90."

This is a citation at once condensed and incomplete. The name "*spicata* Hook. f." is not a MS. one; it should stand "Hook. f. in Journ. Linn. Soc. v. 14 [1875], p. 486." The reference to Pierre should be to "Pierre, Forest Fl. Cochinch. pars 5. Enum. Garc. p. iv." The other references (in the short synonymy of *G. spicata*) are not complete; the reference to Planchon and Triana is to "*loc. cit.* 304"; the synonomy "*Stalagmites ovalifolius* Don." is adduced; it should be "G. Don Gen. Syst. v. 1, p. 621."

Proceeding to the second sp. of *Garcinia*, the citation stands:—

"2. G. LUCIDA Vesque.—C. sp. Oliv. *Fl. Trop. Africa;* Pierre; *Fl. forest, Cochinchin.*"

This is a seriously imperfect citation; it should stand "*G.* sp. n. 8, Oliv. Fl. Trop. Africa, v. 1, p. 167," where Oliver describes the species without giving it a specific name. By Vesque's citation it is not possible to fix down the species meant without a visit to the Kew Herbarium. The condensed citation of Pierre may possibly help; but the truth is I have been unable to find where Pierre does take up this species; his monograph is a full one, and as Vesque cites no page it is easy to overlook Pierre's reference to *G. lucida*.

These are not one or two imperfections, the only ones discoverable in 602 pages. It is evident that M. Vesque grudges every moment spent on bookwork; he sometimes does cite the page and tab. of Pierre, as on Vesque, p. 363, where, however, he first misquotes "*G. Keeniana*" in place of Pierre's "*G. Keenaniana*," and in the next line spells our Cachar friend's name "Keenann.' Of all the numerous spelling slips in the book, one of the most curious is "Sanvalle's Fl. Cuba," which occurs more than once; I thought Sauvalle was a French name; one is not surprised to see English names assume unusual forms under French treatment. The literature of Guttiferæ is exceedingly small, but Vesque makes no effort to attain a moderate uniformity; he cites (usually) the page of his own book, but on p. 385 merely "Vesque, *Epharm.*" A still greater irregularity occurs, throughout the book, in the use of the sign of admiration (!); this is appended to certain (only a few) collectors' numbers seen. Vesque has, from internal evidence, seen at least ten times as many collectors' numbers cited to which no mark of admiration is put. I cannot imagine, if the collector's number has been seen, what difference there is between a number "admired" and one "not admired"; unless possibly the admired number was the one taken for type or for anatomy. This opens up a question of real importance; in order to form an estimate of the value of the anatomical descriptions which occupy so much space, we should like to know when they are drawn from the examination of a single specimen, and when from the examination of a series of specimens, from different localities, collected at different seasons of the year, and produced under different circumstances of moisture and shade.

To sum up the form of the Guttiferæ: it appears clear that M. Vesque cares nothing for the refinements of literary botany. We cannot hope now for a botanist who is "all-round" up to date; if he does the "literature" and the "geography" with finish, it can hardly be hoped of him that he will do the anatomy at all.

Turning from form to substance, I next tried Vesque's Guttiferæ with various Indian bundles in the Kew Herbarium,—with agreeable surprise. The descriptions are very good; they are both faithful and easy to understand (I am for the present not speaking of the anatomy of the leaf); the geography, though it looks very scanty, appears to be really all we have yet got (or very nearly so indeed). The book possesses many merits; setting aside for the present the leaf-anatomy as mere surplusage, the monograph, from the manner in which it closely sticks to good predecessors, and the honesty of the descriptions, will be found (I am confident) much

easier and more satisfactory to work with than several among the preceding monographs.

It opens up afresh the whole question of the "form" which should be given a monograph on this scale. Now, the *form* is not of much importance to the next monographer; he has to get the whole of it and all the plants represented by it into his head somehow; and long before he has done this he has got quite used to the arrangement (or want of arrangement) of his predecessor, and values his predecessor's work at its sterling worth. But a work of this kind is not meant only for the next monographer, perhaps fifty years hence; the justification of its being printed is that it should be a helpful book in the herbarium to every man who has a few (or only one) species of Guttiferæ to name or deal with—against time (as nearly all work has to be done now). This man cannot spend a preliminary day or two in mastering the language, the arrangement, or the system of the monograph; the *form* is everything to him; if the information of the book is put into the ordinary form, and if all the citations are complete, all the books "exhausted," so that he can get at all he wants speedily, this makes the book valuable to him. If the book leaves him in doubt whether a species is MS. or published in some obscure place, he may be occupied some time in trying to satisfy himself that it never has been published; if the monograph cites "Willd." but does not cite also "Kunth," he may spend some time and finally write a letter to North America, to endeavour to discover whether the plant of Willd. was the same as the plant of Kunth. He therefore says, all this work should have been done for me by the monographer when he had all the plants at his fingers' ends and all the literature collected. It would have been a general saving of time for this work to have been done then.

We come at last to the question of the systematic value of the anatomy of the leaf, which occupies so large a portion of Vesque's Guttiferæ. There has been a not uncommon opinion that here also the question of time comes in,—that even if the anatomic details are constant for each genus or each species,—that they are of small use because there is not time, in ordinary herbarium work, to go into "histologic characters." This idea is to a great extent erroneous; the time occupied in making a thin section of a leaf which will show the characters described by M. Vesque (including that of taking off a thin slice to show the stomata), is really not greater than that required to determine the position of the ovules in a small ovary; the manual skill required is less, and the chance of error of observation is (in my opinion) less. The chance of error is not, I think, sufficiently considered by botanists in their estimation of methods; it is a favourite plan with botanists to count the number of style-branches in herbarium examples with a pocket lens; I find the percentage of errors in fact thus introduced so high as to vitiate whole systems of classification.

It must also be recollected that, in many important cases, we have always valued highly and used, in the first steps of investigation, the anatomic method. Does not every tyro look for the trans-

lucent dots if he thinks a specimen is perhaps Aurantiaceous? The question is reduced therefore, mainly, from a systematist's point of view, to the value of anatomic characters (confining ourselves for the present to anatomic leaf-characters) in discovering the hidden bond of descent which determines the affinity of plants. I should fancy that this value will be found greater for genera and sections than for species. The anatomical structure of leaves is rapidly altered by the environment, moisture, shade, warmth. In DC. *Monogr.* v. 6, pp. 16, 17, it will be seen that Hackel could make no use of the anatomic method in systematising grasses. Like all other characters, anatomical will vary greatly in value in different orders and genera, and I should expect in gramina the "durchaus negatives Resultat" which Hackel, a most competent man, arrived at. This is the important point that the old-fashioned systematists have to stand by, *viz.*, that anatomic characters (like all other characters) have a variable value, and that they are only one among a large number of other characters, at least equally entitled to weight. Therefore anatomical characters are not to be given a superior value and to be allowed to swamp all other considerations, any more than the number of the stamens. There is no reason to suppose that the anatomy of the leaf is a better clue to the affinity of the plant than the position of the ovule. The result of attempting a new classification of plants on a single character (in this case the anatomy of the stem) is well shown in Dr. Palla's revision of the genus *Scirpus* in Engler, *Jahrb.* v. 10 [1889], p. 239, where his first genus *Dichostylis* contains plants from the whole range of Cypereæ and Scirpeæ as understood by Bentham or Boeckeler, but displaying similar characters in stem.

Now M. Vesque has done nothing of this kind. He has strictly subordinated his characters from leaf anatomy to the general weight of all other characters. The utmost that can be said against the anatomical method, as introduced by M. Vesque, is that it makes his book 15 per cent. heavier than it otherwise would be; it does not make it more troublesome to find other matters. M. Vesque has said himself (p. 5) the best word for his work:—"On voit qu'au fond la différence entre cette méthode et celle anciennement suivie n'est pas aussi grande qu'on pouvait le croire au premier abord."

The volume is of 643 pages (exclusive of Index), and includes 4907 species.

C. B. CLARKE.

A Student's Text-book of Botany. By SIDNEY H. VINES, M.A., D.Sc., F.R.S. (First Half, pp. x. 430, figs. 279. Price 7s. 6d. Swan Sonnenschein & Co. 1894).

PROF. VINES has produced this part of a new and distinct book intended to replace the English editions of Prantl's *Lehrbuch* which he edited, with the view of meeting the requirements of English students by extending greatly the scope of the original book while retaining features that made it valuable to beginners. There are also additional illustrations, derived mainly from Strasburger's

Practical Botany. This first half contains the morphology, the intimate structure of plants, and the classification of plants, beginning with the Thallophyta and including the whole of the Cryptogams, leaving the Flowering Plants and Physiology, it is to be presumed, to the second half. The adoption of this sequence of parts may be the outcome of deliberation or of mere expediency,—it matters little, since no one is likely to take the book as a reading task from cover to cover; and an index to the whole, which is promised with the second half, will do away with any inconvenience that might otherwise have arisen from sandwiching classification between anatomy and physiology.

The older British text-books richly deserved the reproaches frequently cast at them by their victims and by members of the public whom they repelled from the sacrifice. With the renaissance of the study in this country begun by the publication of the translation of Sachs' *Lehrbuch*, there was a dawn of hope that Botany was about to become clothed with a living interest, and that learning it was to resemble less and less an obstacle race. Numbers of botanists have gone on thinking so to this day, but a rude awakening is in store. The primrose path has led to an everlasting bonfire of such hopes. While Prof. Vines's book abounds in excellences of order and accuracy and judicious inclusion and exclusion—is in other respects all that was expected,—it is simply clogged with terminology, and in places resembles more an ingenious attempt to weave into sentences a dictionary of botanical terms than a plain account of facts and opinions which after all is the aim. I have not a spark of sympathy with those who grumble loudly against the evils of terminology. That a complicated terminology is no great deterrent from learning is proved by the experiences of those who learn seamanship or dress-making, which both abound, especially the former, in strictly technical terms. The topographical anatomy of the rigging of a full-rigged ship and the physiology of its functions which are the elements of seamanship, bristle with a terminology which is far harder to learn than biological terminology, from its unclassical and ungrammatical character. But the "stickit sailor," as he is described in seaports is not a product of nautical terminology, though he may be the object of illegitimate portions of it. Without sharing then such objections to a fairly copious use of terminology, I confess to a disappointment with the abuse of it in this book, and the disappointment is the more keen that the book is otherwise so good. There is really no reason why botany should not be written about and taught to students, elementary or advanced, in other than the English language with botanical terms interspersed. Portions of this book are written in a botanical language connected by English words. It is perhaps an evil outcome of feeding on translations from the German for so long.

Having got rid of this honest growl, it is very pleasant to be able to give the most sincere commendation to the scientific aspect of the *Text-book*. It would be absurd to suppose that a teacher who has reared more botanists of brilliant performance than any other one now living in this country, could do otherwise than write a

good sound *Text-book*. That he should do so has been long desired by those who mourned that the best available ones had been made in Germany. We owe a heavy debt of gratitude to Germany for these books; but the point needs no arguing that a good one of British make would suit native teachers and students much better. This is such a book and its excellences are proof of the matter. The morphology and the anatomy and histology are all that can be desired. The Cryptogamic portion is not on the same level of excellence, and it seems to me that, without being fastidious, the treatment of the Algæ in particular would have been better for more judgment. For example, the putting of *Halimeda* and *Udotea* into *Codieæ* might be justifiable, but surely not *Bryopsis* into *Dasycladeæ*, while to follow De Toni (in his *Sylloge*) and Wille (in Engler & Prantl) in putting a *lichen* like *Chlorodictyon* into *Caulerpeæ* is of course a blunder. When Agardh first described this plant and put it with the *Caulerpeæ*, Asa Gray pointed out the absurd mistake in Silliman's *Journal*, but in spite of the reinvestigation of the matter by Prof. Cramer, and the description of the thallus and apothecia of this very obvious lichen, the error obtained a long start by its inclusion in De Toni's *Sylloge* and in Engler & Prantl's *Pflanzenfamilien*. Again, *Codiolum*, which Prof. Vines follows Wille in placing among the *Botrydieæ*, does not belong to the *Siphonaceæ* at all. There can hardly be any particular reason for putting the diatoms among the *Phæophyceæ* beyond the character of colour. However, Prof. Vines openly, on p. 221, says:—"The nature of this additional colouring matter is usually the same throughout whole families, which also resemble each other in their modes of reproduction. Hence this characteristic affords *a trustworthy basis* [ital. ours] for classification," &c. It would have been preferable, surely, to point out that it frequently coincides with the natural basis of classification in a very striking way, so that the names *Phæophyceæ*, *Rhodophyceæ*, *Chlorophyceæ*, which come down to us from the older artificial colour classification, still fairly describe otherwise natural subclasses. But Prof. Vines, having adopted the principle of colour classification, is consistent in putting the diatoms with the *Phæophyceæ*, though this is a regrettable thing.

The high level of excellence in the rest of the book has invited this criticism of points that are not very serious (apart from the too pervasive terminology), and it would be ungracious to refrain from saying that if the second half is as good as the first, students of botany in this country will have reason to be grateful to its author.

G. M.

The Flowering Plants of Western India. By the Rev. ALEXANDER KYD NAIRNE, late Bombay Civil Service. London: W. H. Allen. 8vo, pp. xlvii, 401. Price 7s. 6d. net.

"SCIENCE is a steep island surrounded by a few more rocks than are necessary, to which every savant makes it a pleasure and a duty to add some asperities. I pass people over in a light wherry." This sentence, to which is appended the name of Alphonse KARR,

appears on the title-page of Mr. Nairne's book, and at once invites the mind to speculate. How many rocks are "necessary" to a "steep island"? How does a savant—nay, "every savant"—"add some asperities" to these rocks? Who, what, where, are the "people" whom Mr. Nairne "passes over in a light wherry"? Taking the whole sentence as metaphorical, and assuming that the steep island symbolises the Indian Flora, and that the rocks represent technical descriptions, it is easy to identify the people "passed over" with the sedges, grasses, and other monocotyledons which are excluded from "the Flowering Plants of Western India" because their flowers "consist only of bracts or scales." But then, how about the wherry?

Arrested thus on the very threshold, we tear ourselves away to enter upon the feast which Mr. Nairne has prepared for us. Not at once, however, do we arrive at the table. A tray of dainty little morsels—whets to the appetite—is provided, in the shape of a "prelude of quotations," from the works of Locke, "Hooker" (which?), Wordsworth, Darwin, Canon Henry Melvill, "The Path of Virtues (Buddhist)"—a mysterious saying,—Mr. Grant Allen, and Southey—who is responsible for the statement that "the Linnæan traveller who, when you look over the pages of his journal, seems to you a mere botanist, has in his pursuit an object that occupies his time and fills his mind and satisfies his heart." We do not know whether Mr. Nairne is a "Linnæan traveller," but he is certainly not "a mere botanist."

Other introductory remarks are found under "Errata,"—in which Mr. Nairne does scanty justice to his material,—"Preface," "Introduction," "Definitions," "Classification"; and by the time we have glanced through these, we are able to form some estimate of Mr. Nairne's qualifications (which are not extensive) for his self-imposed task, and of his literary style, which is odd. For example, he says he has not included "the flowerless orders, such as ferns and mosses, *much less* the seaweeds" (p. xix); and that "every plant *as a rule* [has] its own fruit" (p. xxxvi); here we seem to have hit upon a rule without an exception. Mr. Nairne is critical in his choice of terminology, as when he retains trifoliate in preference to "the modern and more correct word trifoliolate, which seems needlessly pedantic for [his] purpose": and we suspect him of sarcasm when he refers "the *unscientific* reader" to "the works of Mr. Grant Allen": we should be inclined to suggest Father Gerard's little books as a wholesome corrective.

The scientific portion of the book shows only too plainly that the author has not mastered his subject, and is therefore an inadequate guide. It must be added, however, that his preface expresses a consciousness of this, but his suggestion that those who use the book should send him "a list of the mistakes and omissions they find," shows that he does not realise its inadequacy. The "mistakes" are perhaps chiefly typographical—there are at least four on the page (8) open before us, not one of which is mentioned in the errata,—but there are others, as when the Compositæ are defined as having "flowers composed of many distinct perfect

florets;" and many which show that Mr. Nairne does not in the least understand the authors he quotes. Thus he says *Adhatoda vasica* is "so closely allied" to two species of *Justicia* that "it seems a pity that they have ever been separated, particularly as this opinion is also expressed in H."—an initial which does not represent the locality of which good intentions are said to supply the pavement, but stands for the *Flora of British India*. It may be pointed out that the separation took place a long while before any opinion could have been "expressed in H.," and, further, what is expressed there—*i. e.*, that "the genus should be merged in *Justicia*, Sect. *Betonica*"—is by no means what is conveyed by Mr. Nairne's remark.

The last quoted example is only one out of very many which might be adduced to show what is the chief defect of the book—it is based upon insufficient knowledge, whether of the country (as is shown by the very large proportion of plants not seen by the author, which are relegated to smaller type and marked with an asterisk), of botanical terminology (no author's names are appended to the species), or of the plants themselves. The title is misleading: for (as we have already said) the large and important orders *Cyperaceæ* and *Graminæ*, with others, are omitted, and "Western India" is "taken as synonymous with the Bombay Presidency," with the further exclusion of Sind. The volume is of convenient size and nicely printed: Mr. Nairne's intentions are excellent, but he has not the knowledge needed to carry them out.

The Student's Introductory Handbook of Systematic Botany. By JOSEPH W. OLIVER. London: Blackie & Son. 1894. 8vo, pp. xvi, 366, with 170 figures in the text. Price 4s. 6d.

Object-lessons in Botany from Forest, Field, and Garden; a first Botany-book for Teachers of Little Students. By EDWARD SNELGROVE, B.A. London: Jarrold & Sons. 1894. 8vo, pp. viii, 109. Price 2s. 6d.

MR. J. W. OLIVER, whose *Elementary Botany* was noticed in this Journal for 1891 (p. 220), has now given us one of the best little text-books we have seen for some time. It contains nothing new or startling in arrangement; in fact, is in several points distinctly behind the times, and represents rather the state of our knowledge some ten years back, at the date of the issue of the translation of Goebel's *Outlines*, than in January, 1894, when the author signed his preface. This is what we should expect from the list of works, ten in number, consulted and recommended: Goebel's is the most recent of these which deals with classification. Bentley's *Manual* has no doubt served its turn, and has been a useful book in its time; but it is out of date now, and nothing remains but to give it decent burial; when there are more modern works ready to hand, it seems a pity to direct the student to the ancient ones; he will have quite enough to unlearn when he has digested the very latest.

The *Handbook* is intended chiefly for students who have already passed through an elementary course, such as that laid down in the

author's elementary text-book, and accordingly we start straight away with the Thallophyta, and are gradually led up through Algæ and Fungi, Muscineæ and Pteridophytes, to the Seed-plants. Valuable hints as to the habitats, time of fruiting, and preparation for microscopic examination, of some of the less known Cryptogams are included, as a help to private students who are beyond the reach of schools or classes where microscopic preparations are provided. In dealing with the Phanerogams, the British orders are treated in greater detail, and descriptions given of most of the British genera. The account of the Angiosperms occupies more than half of the book, and the Monocotyledons are considered first; we think the author is wise in starting with the *Liliaceæ*, and passing from the petaloid orders with superior ovaries to their epigynous allies, and then to those with more irregular and highly specialised flowers like the *Musaceæ* and Orchids, while the sedges and grasses are left to the last. Dicotyledons are divided into the three classes of the *Genera Plantarum*—*Polypetalæ*, *Gamopetalæ*, and *Apetalæ* or *Incompletæ*, and the sequence of orders is also the same as in that work. No attempt is made to indicate the affinities of the so-called "Incompletæ," and we find *Casuarinæ* in its old position, with no mention of Treub's work published more than two years ago, though its importance from a systematic point of view is great, especially as somewhat similar discoveries have been made in various genera of *Cupuliferæ*. Apart from these blemishes, the book is well arranged and clearly written, and there are not the frequent errors so characteristic of some works. The illustrations are plentiful and very good, especially those in the sections on Thallophytes; and the teacher who can supplement it by notes on more recent views and discoveries will find it a useful class-book.

Mr. Snelgrove's little book contains a series of thirty-three object-lessons, intended to serve as an introduction to Botany as a class subject in schools. About a score of the commonest fruits and vegetables are, in as many lessons, shown to the children, and by a process of questioning they are led to tell first the general appearance, and then, by cutting up or pulling to pieces the specimen, to investigate the structure; while another series of questions elucidates the uses of the parts both to the plant and to mankind. In the second half of the book, other plant-products, like wheat, sugar-cane, sago and tapioca, tea, coffee, cotton, &c., are treated in the same way. The idea of the book is an excellent one, and in the hands of an apt and capable teacher the lessons will be a valuable help in the cultivation of the habits of observation in children, and in leading them to take an intelligent interest in their surroundings. The illustrations are often very poor, but as the teacher is supposed to show the children either the real object or a good picture, this is no great matter. In view of this, it is hard to understand why some have been inserted at all, *e.g.*, the sugar-canes in fig. 31, which look like representations of fossil plants; while fig. 32 is a wretched apology for a "cocoa-nut," which, by the way, should be coco-nut.

A. B. Rendle.

ARTICLES IN JOURNALS.

Bot. Centralblatt. (Nos. 9–11).—A. Herbst, 'Zur Kenntniss der Markstrahlen dicotyler Kräuter und Stauden.'

Bot. Gazette (Feb. 16). — E. Thaxter, 'The genus *Nægelia* of Reinsch' (1 plate).—L. N. Johnson, 'Some species of *Micrasterias*' (1 plate). — F. H. Blodgett, 'Development of bulb of Adder's-tongue' (2 plates).

Bot. Magazine (Tokio).—(Jan. 20). K. Okamura, 'Structure of *Cyclonium armatum*.'

Bull. de l'Herb. Boissier (Feb.). — J. Briquet, 'Questions de Nomenclature.' — J. Müller, 'Lichenes Eckfeldtiani.' — R. Buser, 'Sur les Alchimilles subnivales.' — N. Alboff, 'Nouvelles contributions à la Flore de la Transcaucasie.' — Id., 'Fragmenta Monographiæ Labiatarum.'—A. de Jaczewski, '*Puccinia Peckiana*.'

Bull. Soc. Bot. France (xl. Comptes rendus, 4–6: Feb. 28).—J. Costantin, *Eurotiopsis*, gen. nov. (Ascomycetes). — D. Clos, 'Chaubard et la *Flore Agenaise*.' — Id., '*Luzula maxima*, *Matricaria inodora*, &c., en glossologie.' — P. Vuillemin, 'Sur des Roses à carpelles biovulés.'— P. Duchartre, 'Monstruosité foliaire et florale d'une Clematite.' — A. Battandier, 'Excursion dans la région de l'Ouarsenis.' — A. Chatin, 'Sur la multiplicité des parties homologues.' — Id., 'Sur une Truffe du Caucase, la Touboulane.'— L. Mangin, 'Nouvelles Observations sur la membrane.'—Id., 'Les cellules mucifères et résinifères du *Taxus baccata*.' — H. Coste, *Centaurea* × *calcitrapo-pectinata*.—B. Martin, 'Revision des *Rubus*, *Rosa*, *Galium*, et *Hieracium* de la flore du Gard.' — A. Deflers, *Kalanchoe teretifolia*, sp. n. (3 plates).— —. Miègeville, '*Campanula præcox* Mièg. (sp. n.) & *Myosotis pyrenaica*.'—P. Van Tieghem, 'Sur la structure et les affinités du *Nuytsia* et des *Guiadendron*.'— —. Molliard, 'Fleurs doublés du *Petunia hybrida*.'

Bull. Torrey Bot. Club (Feb. 20). — A. Hollick, 'Palæo-botany of the Cretaceous Formation on Long Island' (7 plates). — E. G. Britton, 'N. American species of *Weissia*.' — B. D. Halsted, 'Club-root in common weeds.' — E. J. Hill, '*Potentilla recta*.' — N. L. Britton, 'Herbarium of Stephen Elliott.'

Erythea (Feb. 9). — J. B. Ellis & B. M. Everhart, 'New West American Fungi.' — A. Davidson, 'Californian Field Notes.'— F. T. Bioletti, 'An experience in herbarium making.'

Gardeners' Chronicle (Feb. 24). — *Nephrodium bibrachiatum* Jenman, sp. n.—(Mar. 3). *N. nimbatum* Jenm., sp. n.

Journal de Botanique (Jan. 1, 16; Feb. 1). — C. Sauvageau, 'Notes biologiques sur les *Potamogeton*.' — (Jan. 1). E. Bonnet, 'Notes sur quelques plantes de Tunisie.' — G. Poirault, 'Les Urédinées et leurs plantes nourricières.' — (Jan. 16; Feb. 1) E. Bescherelle, 'Selectio novorum muscorum.' — (Feb. 1). C. Rouy, '*Cypripedilon Marianus* Rouy (! = *Cypripedium Calceolus* L.) et *Carex caryophyllea* Latourelle.'—(Feb. 16). A. de Coincy, 'Plantes

nouvelles de la Flore d'Espagne.' — L. Guignard, 'Recherches sur certains principes actifs chez les Papayacées.'—A. Lemaire, 'Deux formes nouvelles de *Coelastrum*.' — —. St. Lager, 'Sur quelques noms de plantes vicieux par pléonasme.'

La Nuova Notarisia (Jan.).—P. Pero, 'I laghi alpini valtellinesi.' —O. Borge, 'Uebersicht der neu erscheinenden Desmidiaceen-Litteratur.' — G. B. de Toni, 'I nuovi Istituti scientifici pergli studii delle Alghe marine.'

Oesterr. Bot. Zeitschrift. (Mar.). — F. Arnold, 'Lichenologische Fragmente.' — E. Heinricher, 'Studien an den Blüthen einiger Scrophulariaceen.' — J. Freyn, 'Plantæ novæ Orientales.' — A. v. Degen, 'Bemerkungen über einige orientalische Pflanzenarten.'— F. v. Mueller, 'Ueber die Giftigkeit der *Homeria*-Arten.'

BOOK-NOTES, NEWS, &c.

The Messrs. Durand announce for early publication a *Census Orchidearum*, to appear as soon as a sufficient number of subscriptions have been received to justify the undertaking. The work is to appear in five parts of 200 pp. each, and the subscription price is 6 fr. for each part. Each name will be followed by the place and date of publication, with other information. There can be no doubt as to the utility of such an undertaking, and M. Th. Durand's previous work in the same direction affords sufficient guarantee that it will be excellently done.

The first volume of the *Conspectus Floræ Africæ*, which M. Th. Durand and Dr. Schinz are preparing, will shortly appear, and the second volume also is announced for the present year. The first instalment, which will contain the Monocotyledons, and extend to 800 pages, has been wisely delayed, in order to allow of the MS. of the *Cyperaceæ* being read and annotated by Mr. C. B. Clarke, the monographer of that order.

We have to thank Prof. Marc Micheli for a copy of his interesting and appreciative notice of "Alphonse DeCandolle et son œuvre scientifique," reprinted from the *Archives des Sciences* for December last. It contains a portrait and an excellent bibliography, in which we note that the remarks on nomenclature, published in this Journal for 1888 (p. 289), do not find a place.

Mr. F. M. Bailey sends us another instalment of his *Contributions to the Queensland Flora* (Queensland Dept. of Agriculture, Botany Bulletin, no. viii. Dec. 1893), in which, as usual, several new species are described. There are also several *nomina nuda* among the fungi, of which the authors' descriptions are "not yet to hand," and which should, we think, have been withheld until they could have been published in proper form. We are glad to note that Mr. Bailey has been confirmed in his post as Colonial Botanist, in which capacity he is doing excellent work.

THE Supplement to Britten and Holland's *Dictionary of English Plant Names* is in active preparation, and will, it is hoped, be included in the English Dialect Society's publications for the current year. Any lists of local names, or even single examples, will be gladly received by the Editor of this Journal.

WE have received the first two numbers of the *Records of the Botanical Survey of India*, published under the direction of Dr. King. The first contains an account of Mr. J. F. Duthie's botanical tour in Kashmir in 1892; the second is devoted to Mr. G. A. Gammie's tour in Sikkim, and has already appeared in the *Bulletin of Miscellaneous Information;* it was referred to at p. 62. Each number is paged separately, which seems an inconvenient arrangement for future reference.

THE first number of *Science Progress*, "a monthly review of current scientific investigation," has been issued. It is "edited by" Mr. J. B. Farmer, and "conducted by" Mr. H. C. Burdett—a dual control which strikes us as somewhat novel, and of doubtful practicability. It is handsomely printed, on good paper, but 104 pages of large type, without illustrations, is somewhat dear at half-a-crown. Mr. Hemsley contributes a paper on "Insular Floras," in which he summarises his own and other previous publications on the subject, but does not materially add to our knowledge; and Mr. A. C. Seward writes on "Fossil Plants." There is no provision for news, notes, reviews, or correspondence, and, so far as we can judge from this first issue, "current scientific investigation" will continue to be better represented by *Natural Science* than by this more imposing and more expensive review.

A NEW Portuguese natural history publication—*Annaes de Sciencias Naturaes*—the January number of which has just reached us, has made its appearance this year. It is edited by Señor Augusto Nobre, and is to appear quarterly. The present part contains a paper by Mr. Edwin J. Johnston, who, in spite of his English name, writes in Portuguese, entitled "Esboço de um Calendario da Flora dos arredores do Porto." Two quite shocking "phototypes" of plants do not ornament the number.

Minnesota Botanical Studies is the title of "Bulletin No. 9" of the Geological and Natural History Survey of Minnesota, which is to be issued by the "state botanist," Mr. Conway MacMillan, "in occasional parts until a volume is completed." It is practically a local botanical journal, and may become useful. This number contains papers by Mr. E. P. Sheldon, who seems likely to take high honours in the topsyturvy school of nomenclature which some American botanists are working so hard to establish.

AMONG the books awaiting notice are Prof. Willkomm's *Supplementum Prodromi Floræ Hispanicæ;* Part v. (concluding the first volume) of Miss Woolward's Monograph of *Masdevallia;* the *Letters of Asa Gray;* and M. Drake del Castillo's *Flore de la Polynésie Française*.

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BIOGRAPHICAL INDEX

OF

BRITISH AND IRISH BOTANISTS

BY

JAMES BRITTEN, F.L.S., & G. S. BOULGER, F.L.S.

THIS INDEX, which was first published in the 'Journal of Botany,' has elicited general interest. It originated in the supposition that the want of such a reference-list, often felt by the authors, might also be shared by others; and the numerous expressions of interest and approval have fully justified the belief. Numerous additions to the information given in the Journal have been made, and some corrections. The list of names has also been considerably extended.

"The utility and general accuracy of this compilation were rendered evident in the course of its publication in the *Journal of Botany*, and the favourable impression then received is amply confirmed now that the Index appears revised and completed up to date."—*Athenæum*, Dec. 30, 1893.

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BRITISH AND FOREIGN.

EDITED BY

JAMES BRITTEN, F.L.S.,

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Homilacanthus Gregorii *S. Moore.*

NEW ACANTHACEÆ FROM TROPICAL AFRICA.

By Spencer Le M. Moore, B.Sc., F.L.S.

(Plate 343.)

Homilacanthus,* Diclipterearum, genus novum. Bracteæ 2, omnino liberæ, flores 3 (an semper?) bracteasque minores includentes. Calyx alte 5-partitus, segmentis linearibus subæqualibus post anthesin elongatis. Corollæ æstivatione bilabiatim imbricatæ tubus gracilis, rectus, limbum subbrevem 2-labiatum excedens; labium posticum æstivatione extimum breviter bilobum, anticum longius et trilobum. Stamina 2, faucibus affixa; antheræ 2-loculares, loculo altero altius affixo, ambobus rectis basi ecalcaratis. Staminodia 0. Discus brevissime cupularis. Stigma obtusum. Ovula quove in loculo 2. Pollinis grana minima, lævia, biporosa. Capsula linearis, brevistipitata, placentis a valvis haud solvendis, 4-sperma. Semina compressa, suborbicularia, hispidula, retinaculis parvulis fulta.

Ob placentas haud elastice solvendas nullo pro genere *Diclipterearum* nisi pro *Peristrophe* habendus; ceterum inflorescentia plantæ nostræ singularis, et calycis segmenta bracteas tandem superantia. Corollæ labia itaque *Peristrophis* elongata et integra vel summum bifida.

Homilacanthus Gregorii, sp. nov. Caule sat elato subtereti ad nodos tumido secus lineas duas pubescente dein glabro, foliis ovatis breviter ac obtuse cuspidatis basi rotundatis et acutis vel in petiolum breviter decurrentibus fere glabris margine ciliolatis petiolis gracilibus fultis, spicis admodum evolutis folia plus quam duplo superantibus, bracteis ovatis vel ovato-lanceolatis acutis vel plus minus acuminatis membranaceis, bracteis interioribus lineari-lanceolatis exterioribus subæquilongis, calyce corollam subæquante, corollæ labio postico late oblongo, antico obovato, hujus lobis oblongis obtusis, antheræ loculis minutis oblongis, ovario oblongo, stylo gracili ovario subæquilongo, capsula acuminata glabra.

Hab. Ad "lower edge of Bamboo zone," Mt. Kenia, Jun. 24, 1893, legit cl. Dr. J. W. Gregory (v.s. in herb. Mus. Brit.).

Caulis deorsum versus 0·25 sursum versus 0·1 cm. diam., longitrorsum sulcatus, in sicco olivaceus. Foliorum lamina usque 5·0 × 3·0 cm., sæpe attamen minor, tenuis, utrinque cystolithis et supra pilis paucissimis appressis strigosis munita; petioli attenuati, ascendentes, pilosi, sub lamina anguste alati, 0·5–2·0 cm. long. Spicæ usque 12·0 cm. long. et forsan admodum evolutæ longiores (exemplarii alterius juvenilis 3·0 cm. long.), 1·0 cm. lat., intervallis ± 0·5 cm. long. bracteatæ. Bracteæ 0·8–0·9 cm. long., 0·35–0·5 cm. lat., virentes, obsolete ciliolatæ. Bracteolæ usque 0·7 cm. long. (sæpe vero minores), circa 0·1 cm. lat., acutæ. Calycis segmenta temp. floritionis circa 0·7 cm. long. sub fructu usque 1·0 cm. attingentia. Corolla tota paullo ultra 1·0 cm. long.,

* Gr. Ὅμιλος, a crowd.

puberula; tubus 0·8 cm. long., 0·1 cm. lat., faucibus lævissime amplificatis; labium posticum 0·22 × 0·2 cm., lobi deltoidei, acuti, circa 0·07 cm. long.; labium anticum 0·35 cm. long., circa 0·25 cm. lat., usque medium lobatum. Pollinis grana circa 20 μ diam., ambitu sphærica vel subsphærica faciebus parum elevatis. Ovarium 0·17 cm. long., sursum versus attenuatum. Capsula 1·0 cm. long.; valvæ submembranaceæ pars stipitata vix 0·5 cm. long. (vel minor), gracilis, pars seminifera vix 0·4 cm. long., acumen aspermum. Semina 0·12 × 0·17 cm., margine haud incrassata, albida. Retinacula recta, linearia, obtusa, basi tumida, circa 0·1 cm. long.

The specimens have but few corollas, and such as I have examined being by no means in good condition, it has been found impossible to make a quite complete analysis. Though very small irregularities may occasionally be made out upon the exine, the pollen-grains are usually quite smooth, and not even with chloral hydrate is more complicated structure to be discovered. I could never see more than two pores, so that this pollen is strictly comparable with that of *Whitfieldia* and *Stylarthropus* as figured by Lindau*—genera far removed from *Homilacanthus*. On the other hand, *Peristrophe*, *Hypoëstes* and neighbouring genera have the so-called "Spangenpollen," characterised by six narrow and three broader stripes or bands with a broad connection at the poles, and three pores. But although the pollen of the two genera is so unlike, those even who attach classificatory importance to pollen would not, it is presumed, doubt the affinity of *Homilacanthus* with *Peristrophe*, seeing that smooth pollen occurs in several undoubtedly distant genera, such as *Mendoncia*, *Codonacanthus*, *Gatesia*, and *Macrostegia*. The lenticular shape of the pollen, as seen in an edgewise view, reminds one somewhat of the pollen of *Thomandersia*, but there are essential differences.

Thunbergia (§ Euthunbergia) **Gregorii**, sp. nov. Caule scandente longe ac patente ferrugineo-hispido, foliis ovatis apice mucronatis basi angulis acutis sagittato-cordatis raro subtruncatis utrinque vel latere uno semel vel bis breviter lobulatis nonnunquam subintegris petiolis alatis folia semiæquantibus vel æquantibus insidentibus, floribus majusculis axillaribus solitariis longipedunculatis et revera pedunculis plerisque folia excedentibus, bracteolis saltem 3·0 cm. long. dorso carinatis, calyce inæqualiter pluridentato, corolla bracteolas bene excedente, staminibus didynamis, antherarum loculis apice obtusis basi cristatis et calcaratis, stigmate subæqualiter bilobo.

Hab. Ad Kilungu in montibus Iveti, reg. Ukambani, legit cl. Dr. J. W. Gregory, 1893, men. Apr. fl. (v. s. in herb. Mus. Brit.).

Caulis volubilis, in longitudinem striatus, summum 0·2 cm. diam. Petioli 1·8–3·5 cm. long., patuli, deorsum vix alati, sub lamina 0·2–0·25 cm. lat., utrinque hispiduli; foliorum lamina 3·7–4·2 cm. long., basi 3·0–4·0 cm. medio 3·0–3·5 cm. lat., subtus aliquanto decolor, utrinque appresse hirsutula, costis subtus prominulis. Pedunculi 4·0–7·5 cm. long., patente ferrugineo-hispidi.

---

* Engler's bot, Jahrb. xviii. 1893 (fig. 1A & 25).

Bracteolæ foliaceæ, 3·2–3·8 cm. long., oblongæ, apiculatæ, basi leviter cordatæ, dorso carinam circa 2·5 cm. long. et 0·3 cm. alt. proferentes, extus hirsutulæ intus glanduloso-puberulæ et subnitentes. Calyx glanduloso-pubescens, totus 0·5 cm. alt. et diam., dentibus circa 14 anguste triangularibus acutis vel acuminatis. Corollæ fere usque 5·0 cm. long. tubus superne ampliatus, paullo supra basin leviter coartatus, basi 0·35 cm. faucibus circa 1·0 cm. lat.; limbi lobi subæquales, oblongi, undulato-truncati, 1·5 cm. long. Stamina ad 0·4 cm. supra basin tubi inserta; filamenta 0·5 cm. long., duo attamen paullo longiora, omnia crassiuscula et pubescentia. Antheræ oblongæ, vix 0·7 cm. long.; loculi omnes basi crista prominula muniti, antheræ staminum longiorum eleganter bi- staminum breviorum unicalcaratæ; pollinis grana globosa, circa 70 μ diam. Discus crassiusculus. Ovarium vix 0·2 cm. alt. Stylus 1·8 cm, long., glaber, sub stigmate parum ampliatus. Stigma incrassatum, lobis oblongis truncatis 0·2 cm. lat. prædítum. Capsulæ non suppetebant.

Cum *T. alata* Boj. et affinibus componenda, et certe *T. Erythreæ* Schfth. a cl. Lindau nuperrime divulgatæ proxima, quacum certe non conspecifica ob folia et bracteolas diversiformes, calycem et flores minores, stamina majora, filamenta pubescentia, antheræ longiores et obtusæ nec acutæ, stigmatis lobos subæquales nec inæquales.

The "crest" above alluded to is made up of a large bunch of long hairs, consisting each of a single row of small cells; it probably functions as a pollen-collecting apparatus, and the spur, an outgrowth of the anther composed of numerous fusiform relatively thick-walled pitted elements, may in this and similar cases help to impede the movements of visiting insects, and so ensure pollination. The characteristic ribbon-like exine is clearly shown by these moistened pollen-grains without the use of any reagent. The country where this plant grows Dr. Gregory notes as "bare gneiss mountains with upland pastures and shambas; numerous deep valleys."

Thunbergia (§ EUTHUNBERGIA) **Gibsoni**, sp. nov. Caule? foliis (ex Gibson) ovatis, floribus majusculis longipedunculatis, pedunculis hirsuto-pubescentibus, bracteis majusculis ovatis breviter acuminatis basi rotundato-truncatis ferrugineo-hirsuto-pubescentibus, calyce 11-dentato, antherarum loculis apice obtusis basi cristatis et calcaratis, corollæ faucibus valde ampliatis, stigmatis lobis foliaceis subæqualibus, latissime obovatis, 0·5–0·6 cm. lat.

Hab. Crescit in montibus Mau, Afr. Trop. Orient., ubi ad 8,200 ped. supra mare legit cl. Gibson (v. s. in herb. Mus. Brit.).

Pedunculi saltem 8·0 cm. long., 0·15 cm. diam. Bracteæ usque 4·0 × 2·0 cm. interdum vero circa 3·0 cm., intus puberulæ et eleganter nervosæ. Calyx 0·5 cm. long. Corollæ tubus 4·0 cm. long.; limbi lobi 2·0–2·5 cm. lat.; fauces saltem 1·7 cm. diam. Stamina fere 1·5 cm. long. Antheræ 0·6–0·8 cm. long. Discus 0·15 cm. alt. Ovarium 0·3 cm. et stylus vix 2·0 cm. long.

The habitat of this fine *Thunbergia*—the botanical first-fruit of Captain Lugard's expedition—is given by Mr. Gibson as "wet swampy ground amidst hills."

Although without leaves, I feel no hesitation in describing this as a new species, there being no reasonable doubt as to its position in the genus, to which Dr. Lindau has recently published an elaborate clavis.* The affinity is certainly with the last-described species, and with *T. Erythreæ* Schfth., the chief differences between the three being thus stated:—

Corolla-tube scarcely exceeding 3 cm. in length, its lobes 1·5 cm. broad, the throat 1 cm. in diam. Lobes of stigma subequal, 2 mm. wide. Leaves sagittate-cordate, mucronate	*T. Gregorii.*
Corolla-tube 4·5 cm. long, the lobes 2 cm. broad, and throat 1 cm. in diam. Lobes of stigma unequal, one 1 mm., the other 2 mm. wide. Leaves hastate, acuminate	*T. Erythreæ.*
Corolla-tube 4 cm. long, the lobes 2–2·5 cm. broad, the throat at least 1·7 cm. in diam. Lobes of stigma very large, 5–6 mm. wide. Leaves ovate	*T. Gibsoni.*

Mr. Gibson has kindly sent this note *apropos* of his new *Thunbergia*:—"The plant was collected on the 1st April, 1892, in a deep swampy hollow towards the southern portion of the district of Lykamasia. The latitude is 0° 0′, and the approximate longitude by dead reckoning 36° 70′. The gneiss hill of Donyo Sagorne, a conspicuously wooded height, lies about ten miles off in a S.S.W. direction, while Lake Nakuru is about sixty miles distant in a S.W. direction. The approximate elevation is 8000 ft. (aneroid). The locality marks a break in the great line of escarpment which, under the name of Ulau, stretches at a height of 10,000 ft. from south of Lake Navaisha to north of Lake Baringo. The spot was sheltered by gneiss hills, and, though towards the end of the dry season, the ground was damp. The plant was not growing in water. Owing to the sheltered position, the heat during the day was intense, but the nights were cool. *Juniperus procera* was growing luxuriantly on the surrounding hills. The plant was not noticed in any other localities, either to the south, near Lake Navaisha, and on the same line of elevation, or further inland. The flower is conspicuous; the plant grows in isolated clumps. The leaves are small and ovate. The petals are of a brilliant deep orange-yellow, and of a waxy consistency."

Dyschoriste Hildebrandtii S. Moore in Journ. Bot. 1880, p. 8 (*Calophanes*) var. mollis. A typo discrepans indumento villosulo, calyce longiore, 2·0 cm. long., corollæ tubo paullo longiore et lobis rotundatis nec truncatis, itaque disco necnon ovario longiore hoc revera tenuiore.

Hab. Ad "Steppes of the Thika thika, Tana, July 16, 1893, legit cl. Dr. J. W. Gregory (v. s. in herb. Mus. Brit.).

On account of the name *Dyschoriste* enjoying a few months' priority over *Calophanes*, the latter must be dropped.

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* Engler's bot. Jahrb. xvii. (1893).

Mellera nyassana, sp. nov. Caule robusto tetragono hirsuto deinde puberulo vel omnino glabro, foliis dimorphis aliis majoribus petiolatis oblongo-ovatis vel anguste obovatis obtusis margine distanter crenato-undulatis nunc hirsuto-pubescentibus nunc præsertim in nervibus pubescentibus, aliis et revera iis ramorum floriferorum imminutis et bracteolis subæqualibus lineari-oblanceolatis obtusissimis glanduloso-pubescentibus, floribus in paniculis terminalibus folia excedentibus dispositis, bracteolis elongatis anguste spathulatis glanduloso-pubescentibus, calycis segmentis bracteolis subsimillibus nisi minoribus, corollæ tubo calycem subæquante superne amplificato, labii postici alte bilobi lobis elongatis ovato-oblongis emarginatis labii antici usque medium trilobi lobis lateralibus oblongis obtusissimis lobo intermedio ovato-oblongo emarginato, staminibus exsertis filamentis pubescentibus, antheris elongatis basi eleganter calcaratis, ovarii loculis 6-ovulatis.

Hab. Ad Lukoma juxta ripam lacus Nyassa leg. cl. Bellingham (v. s. in herb. Mus. Brit.).

Verisimiliter suffrutex, caule usque 0·35 cm. diam., ad nodos parum tumido, deinde obsolete 4-alato. Folia majora usque 8·0 × 4·5 cm., sæpe vero minora; costulæ supra impressæ, subtus eminentes; petioli summum 1·5 cm. long., hirsuto-pubescentes; ramorum floralium folia circa 1·5 cm. long. petiolis se ipsa semiæquantibus vel subæquantibus insidentia. Bracteolæ ± 2·0 cm. long., superne 0·4 cm. lat., in sicco virentes vel aliquanto decolores, membranaceæ. Calycis alte 5-partiti segmenta vix 1·5 cm. long., ab apice obtusa vix 0·15 cm. lat. sensim coartata, extus pilis glandulosis et simplicibus crebris obtecta intus pubescentia. Corollæ tubus extus puberulus basi vero glaber intus ad medium pubescens 1·5 cm. long., pars inferior 0·4 cm. pars superior 0·7 cm. diam.; fauces breviter saccati; limbus circa 2·5 cm. diam., labii postici 1·6 × 1·2 cm. lobi 1·5 cm. long., ad medium 0·6 cm. lat.; labium anticum vix 2·0 cm. long. et 1·5 cm. lat., ejus lobi laterales 1·0 × 0·55 cm., lobus intermedius basi vix 0·7 cm. lat., intus palato nervoso et setis validis ferrugineis reflexis more generis copiose munitus. Filamentorum paria basi incrassata, pubescentia; pars connata 0·5 cm. pars libera 0·6 cm. long., sub antheris glabra; antheræ oblongæ, obtusæ, hispidulæ, loculi paullulum inæquales, 0·65–0·7 cm. long.; calcar gracile, circa 0·2 cm. long.; pollinis grana late ellipsoidea, 60 × 50 μ, longitrorsum costata, poris tribus æquatorialibus costalibus prominulis instructa. Discus circa 0·07 cm. alt. Ovarium oblongum, glanduloso-pubescens, ægre 0·4 cm. long. Stylus hispidulus, ovario triplo longior. Stigma simplex, obtusum. Capsulæ non suppetunt.

This being a second species of a genus founded several years ago by myself, the examination of the specimens and comparison of their several features with those of the original species (*M. lobulata*) has been a matter of much interest to me. I find all the generic characters peculiar to the latter, with one small exception, shared by the plant here described; these are, the contorted æstivation—the corolla lobes opening very early, so that small buds must be selected if one wishes to make out the æstivation satis-

factorily, the bilabiate corolla, the palate, the lower lip's midlobe provided with a number of great reflexed setæ, and the four stamens—their filaments united in pairs below. In only one point, and that of secondary importance, is there any difference, *viz.*, in the presence of six ovules in each ovarian cell, instead of four. But when one remembers the affinity of *Mellera*, this is only what would be expected; indeed, it seems to emphasize the difference between *Mellera* and *Calophanes* with its couple of ovules in each cell. Exception might perhaps be taken to this statement on the score of the inflorescence—which at first sight seems very different in the two species. But after all, it is only the difference between a spike and a narrow panicle, dimorphic flowering branches being known in other genera, comprising also species not provided with such—of which a good example is the genus *Petalidium*.

Besides the inflorescence and ovules, the following are the chief differences between *M. lobulata* and *M. nyassana;* the leaves of the latter are differently shaped and not lobulate, the upper lip of its larger corolla is still more deeply 2-lobed and the lobes are wider, the lower lip is furnished with more numerous setæ, and, judging from the figure, the palate is more prominent. The anthers also are larger, and their spur is different.

In the structure of the flower are to be seen beautiful adaptations to fertilisation by insects. About the middle of the abaxial side of the corolla-tube are a couple of small pouches, into which probably fit, or at any rate close to which are applied, the two dilated bases of the conjoined filaments. This arrangement, together with the setæ on the lower lip and the spurs to the anthers, seems well calculated to direct an insect's thrust, and at the same time cause much movement on its part while visiting the flower, thus raising the chances of pollination.

So much attention has been paid of recent years to the pollen of *Acanthaceæ*, first by Professor Radlkofer,* and lately by Dr. Lindau,† that a few words on the pollen of *M. nyassana* may not be out of place. Like that of *M. lobulata*,‡ this pollen is of the kind called by our German friends "Rippenpollen," which in its typical form Lindau finds to be characteristic of the tribes *Hygrophileæ* and *Strobilantheæ*.§ The grains of *M. nyassana* are somewhat more ellipsoidal than those of *M. lobulata*, and they have fifteen closely-placed ribs, there being four ribs between each pair of pores, while each pore is situated on a rib; the lips of the pores are very prominent.

Ruellia megachlamys, sp. nov. Caule pilis longis crebris patentibus hispido demum glabro, foliis petiolatis ovatis obtusis

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* Sitzb. d. k. bayr. Akad. Wiss. xiii. (1883).

† Engler's bot. Jahrb. xviii. (1893).

‡ Figured by Lindau, *l. c.* t. i. fig. 12 *a* and *b*.

§ This confirms—so far as the pollen can be taken as a confirmation—my own view, arrived at by study of the flower, that the plant upon which the genus was founded has closer connection with *Hygrophileæ* than with *Euruellieæ*, wherewith the late Mr. Bentham suggested it should be associated.

basi late rotundatis vel truncatis pilis simplicibus puberulis glanduloso-ciliatis, floribus majusculis axillaribus solitariis brevipedunculatis, bracteolis foliaceis amplis calycem obtegentibus rotundatis obtusissimis vel leviter emarginatis, calycis laciniis liberis subæqualibus linearibus vel anguste spathulatis obtusis longe ciliatis, corollæ tubo elongato gracili sursum gradatim ampliato, limbi lobis rotundatis obtusissimis inæqualibus, filamentis planatis prope fauces insertis, capsula calyce inclusa.

Hab. Ad Ngurunga Kifaniko reg. Ndara Ndi in montibus Teita legit cl. Dr. J. W. Gregory, 1893, mens. Apr. fl. (v. s. in herb. Mus. Brit.).

Caulis tandem 0·3 cm. diam., tunc lignosa et cortice albido rimoso obtectus. Foliorum lamina 2·0–4·5 cm. long., petiolis gracilibus glanduloso-pubescentibus patulis 0·6–1·5 cm. long. suffulta, basi usque 3·5 cm. lat., modica vero circa 2·5 cm. Pedicelli vix 1·0 cm. long., glanduloso-pubescentes. Bracteolæ subsessiles, 1·5 cm. long. et 1·5–2·0 cm. lat., utrinque puberulæ, breviter glanduloso-ciliatæ. Calycis laciniæ usque 1·8 cm. long., 0·16 cm. lat., deorsum decolores, extus pilosæ, pilis elongatis simplicibus et brevioribus glandulosis ciliatæ, ima basi fere calvæ. Corollæ tubus pilosus, vix usque 11·0 cm. long., deorsum 0·2–0·27 cm. lat., sursum gradatim usque 1·0 cm. dilatatus; lobi circa 1·5 cm. long., vix totidem lat. Stamina ad 10·5 cm. supra basin tubi inserta; filamentorum pars connata 0·6 cm., pars libera 0·9 cm. long; antheræ lineares, connectivo excurrente obtuse apiculatæ, 0·53 cm. long. Pollinis grana 60–90 μ diam. Ovarium lineare, paullo ultra 0·3 cm. long. Stylus inclusus, 10·0 cm. long., puberulus. Stigmatis lobi vix 0·2 cm. long. Capsula vix matura ovata, glabra, sparsissime minute tuberculata, 1·0 cm. long.; 6 ?-sperma.

Species cum *R. amabili* nob, *disciflora* Oliv. et *bignoniæflora* nob. comparanda, sed facile recognoscenda inter alia ob bracteolas amplas latas calycem sat longam obtegentes.

Crabbea velutina, sp. nov. Caulibus humilibus subteretibus, nodulosis hirsutis deinde appresse pubescentibus, foliis petiolatis obovato-oblanceolatis obtusis basi longe cuneato-attenuatis crenatis vel crenulatis præsertim subtus pubescenti-velutinis, cymis sat longipedunculatis, pedunculis hirsuto-pubescentibus, bracteis lanceolatis spinoso-acuminatis margine spinosis, calycis laciniis valde inæqualibus lanceolatis vel lineari-lanceolatis, corollæ tubo juxta medium subito ampliato limbi lobis ovatis obtusissimis, filamentis basi liberis, disco cupulari, ovarii lineari-oblongi loculis 3-ovulatis, stigmatis lamina suborbiculari, semina quove in loculo 3.

Hab. In Afr. Trop. Orient. legit cl. Dr. J. W. Gregory. eandem plantam ex Afr. trop. or. misit cl. Rev. W. E. Taylor e spec. in Herb. Mus. Brit. asservato (v. s. in herb. Mus. Brit.).

Planta usque 20·0 cm. alt., sed sæpe humilior. Caulis 0·2 cm. diam. Folia petiolo excluso 8·0–16·0 cm. long., 2·5–4·0 cm. lat., supra deinde scabriuscula, margine crebro ciliata; petioli 1·5–3·0 cm. long., sursum anguste alati, supra canaliculati, hirsuti. Cymæ circa 3·0 cm. diam. Pedunculi 2·5–4·5 cm. long. Bracteæ 2·5–3·0

cm. long., margine ciliatæ, dorso appresse hirsutulæ. Calycis villosuli laciniis obtusis vel nervo excurrente acuminatis, dorso in nervo medio eminente pilosis, longe ciliatis, maximis 0·9 cm. long., 0·2 cm. lat., minimis 0·5 cm. long. et circa 0·1 cm. lat. Corolla 1·3 cm. long.; tubus inferne usque 0·18 cm. angustatus, superne 0·5 cm. lat.; lobi 0·3 cm. long., piloso-ciliati. Stamina ad 0·45 cm. supra basin tubi inserta; filamenta longiora 0·44 cm. long.; antheræ late oblongæ; loculi inæquales, basi pilosi; pollinis grana spharoidea vel ellipsoidea, circa 80 μ diam. Discus amplus, circa 0·15 cm. alt. Stylus 0·8 cm. long., glaber. Capsula obtuse acuta, vix 1·0 cm. long., 6-sperma, retinacula quam semina comosa acuminata fere triplo breviora.

C. hirsuta Harv. quacum conferri debetur, foliis lanceolatis, cymis brevipedunculatis &c. gaudet.

Asystasia linearis, sp. nov. Erecta, sparsim ramosa, ramis tetragonis nodulosis gracilibus appresse puberulis, foliis sessilibus elongatis anguste lineari-lanceolatis vel linearibus obtusis basi sensim ac leviter coartatis fere omnino glabris, floribus parvis in spicam interruptam terminalem folia subæquantem dispositis, bracteis bracteolisque linearibus a calyce longe superatis, calycis segmentis subæqualibus linearibus acutis puberulis, corollæ tubo a basi sensim amplificato limbi lobis inæqualibus obtusis lobo antico majori ovato palatifero reliquis oblongis obtusis posticis altius connatis, staminibus inclusis, antheris oblongis mucronulatis loculis inæqualibus basi breviter calcaratis, staminodiis nullis, disco ore undulato, ovario oblongo, stylo incluso basi piloso, capsula ignota.

Hab. Crescit ad Mwatchi in Durama alt. 700 ped., ubi fl. mens. Mart. (Gregory in herb. Mus. Brit.).

Planta circa 60·0 cm. alt., deorsum versus semel ramosa, ramis iterum ramulos abbreviatos debiles emittentibus vel simplicibus, nodis barbellatis. Folia 5·0–8·0 cm. long., 0·5–0·7 cm. lat., supra cystolithis munita, subrigida. Spica circa 7·0 cm. long., attenuata, puberula. Bracteæ et bracteolæ circa 0·3 cm. long., glabræ. Calycis segmenta 0·9 cm. long., nec ultra 0·1 cm. lat. Corolla extus minute pubescens, tota 1·3 cm. long., tubus intus infra staminum insertionem pubescens, basi 0·13 cm. faucibus 0·45 cm. lat.; lobi postici 0·22 × 0·27 cm., laterales 0·35 cm. long., anticus 0·5 cm. long. et lat., palatus parum prominulus, nervosus. Stamina didynama. Filamenta glabra, longiora 0·45 cm. breviora 0·3 cm. long.; antheræ 0·2 cm. long.; loculus alter altero paullo altius affixus; calcar brevissimum, basi incrassatum, simplex, angulo fere recto loculo insertum. Pollinis grana ellipsoidea, 60 × 35 μ. Ovarium 0·13 cm. long., sursum attenuatum; stylus 0·8 cm. long. Capsulæ desiderantur. Ob folia sessilia linearia elongata et corollæ naturam haud sine facilitate ab affinibus distinguenda.

The locality for this Dr. Gregory gives as "rocky pools in woods."

Ecbolium amplexicaule, sp. nov. Caule verisimiliter elato subtereti obsolete puberulo dein glabro, foliis sessilibus amplexicaulibus panduriformi-oblanceolatis obtusis deorsum aliquatenus attenuatis margine crispis glabris, spicis terminalibus folia sub-

æquantibus, bracteis amplis late ovatis summis ovatis basi truncatis vel lævissime cordatis apice subito brevissime cuspidatis margine inæqualiter dentatis vel denticulatis extus pilis simplicibus et glandulosis pubescentibus, calycis segmentis subæqualibus linearibus longe acuminatis pubescentibus, corollæ pubescentis tubo gracili labii antici lobis oblongis obtusis, lobo mediano late ovato obtuso labio postico lineari brevissime bifido, antheris basi brevissime mucronulatis, ovario oblongo glabro, stylo pilosiusculo, capsula obovata inferne attenuata breviter acuminata pubescente 2-sperma, seminibus albidis minute tuberculatis.

Hab. Incolit arenosas in convalli Sabaki 1300 ped. alt. Fl. Aug. (Gregory in herb. Mus. Brit.).

Caulis speciminis nostri longioris 56·0 cm. alt., deorsum versus 0·5 cm. diam., longitrorsum striatus, subpruinosus. Folia 8·0–11·0 cm. long., summa vera paullo breviora, basi auriculata 1·0–2·0 cm. superne 2·5–vix 5·0 cm. lat., supra nitida, subtus sublutescentia. Spicæ 6·5–9·0 cm. long., 2·5–3·0 cm. diam. Bracteæ inferiores 2·5 cm. long., 2·0 cm. lat., membranaceæ, lætevirentes intus pallide nitescentes. Corollæ tubus usque 2·5 cm. long., 0·13 cm. lat., basi parum ampliatus; fauces gibbosi; labii antici lobi vix 1·5 cm. long., 0·7 cm. lat.; labium anticum 1·2 cm. long. et lat.; labium posticum 0·9 cm. long., 0·15 cm. lat., ejus lobi circa 0·03 cm. long. Stamina faucibus inserta, 0·35 cm. long. Antheræ breviter exsertæ, 0·22 cm. long.; loculi inæquales. Pollinis grana 60 μ diam. Stylus vix 2·5 cm. long., superne glaber. Capsula 1·5 cm. long., pars asperma 0·6 cm. long., pars seminifera medio 0·8 cm. lat., dilute brunnea. Semina cordato-ovata, margine parum incrassata, 0·7 cm. long. et lat. Retinacula debilia, fere semilunata, 0·5 cm. long.

Species distinctissima foliis amplexicaulibus et bracteis majusculis primo obtutu cognoscenda.

This seems quite different from any of the numerous forms of that variable plant *Ecbolium Linneanum* Kurz. The toothing of the bracts reminds one somewhat of the var. *dentata* of C. B. Clarke, which, however, in other respects agrees with the type. Another interesting plant in Dr. Gregory's collection is

Ecbolium striatum Balf. fil. in Trans. R. S. Ed. xxxi. p. 226.

Although the specimen is a poor one and without mature flowers, I feel safe in making this determination. Prof. Balfour describes the plant as being very variable in Socotra; and the present plant would seem to be one of the forms of his var. *minor*, its capsule being small—only one centimetre in length. Dr. Gregory brought down still another specimen belonging to this genus—a puzzling one with small amplexicaul leaves, and, so far as can be judged from their imperfect state, *Linneanum*-like flowers. The habitat of *E. striatum* was the same as that of *Asystasia linearis*.

Justicia (§ Rostellaria) **leikipiensis**, sp. nov. Vix dispithamea, ascendens, sparsim ramosa, caulibus tetragonis obsolete puberulis, foliis comparate elongatis subsessilibus linearibus raro lineari-lanceolatis in petiolum gradatim attenuatis fere omnino glabris, floribus mediocribus subsessilibus in axillis plerumque

3-nis, bracteis bracteolisque lineari-lanceolatis calyce multo brevioribus, calycis segmentis 5 subæqualibus linearibus acuminatis, corollæ tubo calycem excedente quam limbo longiore recto nec sursum ampliato, labio postico antico paullo longiore ovato breviter bifido, labio antico late obovato breviter 3-lobo lobis rotundatis, filamentis basi glabris, antherarum loculo altiore calvo, disco breviter bifido, capsula oblonga mucronata 4-sperma, seminibus parvulis tuberculatis dilute brunneis.

Hab. Ad Gopo lal Maru in margine editorum leikipiensium repperit cl. Dr. J. W. Gregory. Fl. Jun. (v. s. in herb. Mus. Brit.).

Caules sat graciles, 0·15–0·2 cm. diam., geniculati et nodulosi, e rhizomate abbreviato pennæ corvinæ crass. radices paucas emittente assurgentes, in sicco olivaceo-purpurei. Folia plerumque 4·0–4·5 cm. long., 0·25–0·45 cm. lat., supra cystolithis instructa; petioli nec ultra 0·4 cm. long., plerumque breviores. Bracteæ 0·2 cm. long., bracteolas bene excedentes. Calyx 0·7 cm. long.; lobi margine ciliolati. Corollæ extus pubescentis tubus vix 1·0 cm. long., 1·0 cm. lat.; limbus 1·0 cm. diam.; labium posticum 0·5 × 0·3 cm., anticum 0·6 × 0·48 cm., hujus lobi circa 0·1 cm. long. et lat.; palatus eminens. Stamina breviter exserta. Filamenta complanata, 0·35 cm. long. Antheræ circa 0·17 cm. long.; loculi oblongi; loc. inferior calcare albo se ipsum vix semiæquanto basi ad angulum rectum subito incurvo onustus. Pollinis grana ellipsoidea, 40 × 25 μ. Discus circa 0·07 cm. alt. Ovarium oblongum, sursum versus angustatum, glabrum, discum ter excedens. Stylus inferne pilosus, 1·1 cm. long. Capsula 0·85 cm. long., 0.25 cm. lat. Semina suborbicularia, vix 0·2 cm. diam., brunnea. Retinacula parva, oblonga, late truncata, circa 0·12 cm. long.

Ob folia subsessilia linearia comparate elongata et corollæ structuram sine dubio pro specie propria habenda.

Dr. Gregory mentions as the habitat of this plant, "Steppes with wooded ravines."

Justicia (§ Monechma) **Gregorii,** sp. nov. Caule sat valido geniculato deorsum versus nudo subtereti pubescente, foliis abbreviatis ovatis vel oblongo-obovatis obtusissimis vel emarginatis basi in petiolum brevem cuneatim attenuatis utrinque præsertim in nervibus pubescentibus, inflorescentiis terminalibus vel axillaribus quam folia brevioribus solitariis oppositisve, bracteis 4-fariatim imbricatis oblongis brevissime cuspidulatis sericeo-ciliatis utrinque minutissime glanduloso-pubescentibus, bracteolis minimis, calycis segmentis 5 subæqualibus lineari-lanceolatis acuminatis glanduloso-villosulis, corollæ tubo limbum subæquante recto faucibus parum ampliatis, labio postico breviter bifido labii antici lobis subæqualibus rotundatis, palato convexiusculo, filamentis basi pilosis, disco bilobo, stylo obtuso integro, capsula ovoidea acuta pubescente 2-sperma, seminibus lævibus.

Hab. Prope Inhuyuni inter Nawasha et convallem Baringo ubi floret Maj. (Gregory in herb. Mus. Brit.).

Caulis ultra 50·0 cm. alt., inferne simplex et usque 0·4 cm. superne ramosus et 0·2 cm. diam., internodia pleraque 6·0–8·0 cm. long. Folia 1·5–2·5 cm. long., 1·0–1·3 cm. lat., supra cysto-

lithigera; petioli 0·2–0·3 cm. long., pubescentes. Spicæ admodum evolutæ 1·5–2·0 cm. long., sæpius solitariæ, si oppositæ paria plerumque inæquilonga, 0·8–1·0 cm. lat. Bracteæ 0·7 cm. long., 0·45 cm. lat., foliaceæ, eleganter nervosæ. Calycis segmenta vix usque 0·5 cm. long., in sicco decoloria. Corollæ tubus vix 0·4 cm. long, basi 0·15 cm. lat.; palatus prominens; labium posticum quam anticum paullo brevius, sublyratum, lobis abbreviatis fere retusum; labium anticum rhombeo-obovatum, 0·4 cm. long. et lat., ejus lobi 0·13 cm. long. Filamenta ad 0·38 cm. supra basin tubi inserta, 0·3 cm. long.; antherarum loculi inæquales, loculus superior basi late truncatus calvus, inferior major et calcare recto valido se ipsum semiæquante munitus. Pollinis grana ellipsoidea, circa 30 μ diam. Ovarium ovoideum, acutum, circa 0·1 cm. long., ovulis 2 superioribus effœtis 2-ovulatum; stylus 0·5 cm. long., pilosus. Capsula 0·4 cm. long., 0·2 cm. lat. Semina suborbicularia, circa 0·1 cm. diam., albida, retinaculis truncatis basi incrassatis 0·15 cm. long. fulcrata.

A *J. debili* Vahl abhorret præter alia foliis nequaquam similibus et revera abbreviatis et comparate multo latioribus, florum multo majorum palato eminentiore et lobis majoribus, staminibus basi pilosis, necnon antheris triplo longioribus.

This plant occurs in country described by Dr. Gregory as "undulating plateaux with basalt flows and lake deposits."

DESCRIPTION OF PLATE 343. — *Homilacanthus Gregorii.* Fig. 1. Corolla opened (× 2). 2. Upper part of stamen (× 10). 3. Pollen (× 600). 4. Ovary and style (× 3). 5. Capsule in calyx, and bracteoles (× 2). 6. Placenta with retinacula (× 5). 7. A seed (× 10).

RUBUS RUBICUNDUS, SP. N.

BY THE REV. W. H. PURCHAS, M.A.

IT is certainly very undesirable to add to the already lengthened list of British brambles, unless very good cause can be shown for doing so; but the plant which it is here endeavoured to describe is so readily distinguishable from other forms, and is so plentiful and characteristic a bramble of the district a mile or two south of Ashbourne, that it would be inconsistent with the treatment accorded to the rest of the genus to leave it without recognition as a well-marked variety. When some years ago I first noticed this bramble in the hedges of the Ashbourne and Derby Road, where it attracted my attention by the peculiar tint of its flowers, as well as by other characteristics, I sent it to Prof. Babington, who referred it to *R. rosaceus*, as also did Dr. Focke when it was afterwards submitted to him by the Rev. W. R. Linton. This decision I was glad to accept, since it appeared to make *R. rosaceus* something really distinguishable from forms of *R. Hystrix*. Further observation of the plant, however, especially by the Rev. W. R. Linton, who has enjoyed the best opportunities of studying it, from living in the dis-

trict which it inhabits, has made it increasingly evident that, notwithstanding its considerable resemblance to some of the Hystrices, its strongest affinities are with the Cæsian group of brambles. Accordingly the Rev. W. Moyle Rogers, who last year saw it growing at Shirley and other places in the Ashbourne district, considers that it should be placed under *R. dumetorum* as a named variety. I have to thank the Rev. W. R. Linton for valuable help in drawing up the following description of it:—

Rubus rubicundus, n. sp. Stem weak and straggling, bluntly 5-angled, commonly with glaucous bloom; prickles scattered, unequal, slender, decurved or declining from short strongly compressed bases: the larger ones mostly on the angles; acicles and smaller prickles few, irregularly stalked glands very numerous; leaves quinate; leaflets thin, convex, roundish-ovate-acuminate or roundish-obovate-acuminate, irregularly and often doubly crenate-dentate or cuspidate-dentate, yellowish green and glabrous above, beneath paler and clothed with shining silky hairs. Flowering branches long, their lower leaves quinate, upper ones ternate, the uppermost often having the central leaflet lanceolate-obovate. Panicle leafy nearly to the top, its branches long and, like the peduncles, spreading widely, very setose and aciculate. Flowers very numerous; sepals broadly-ovate, acuminate, and generally with lengthened points, felted, shaggy and setose outside, with a whitish border, within greenish white-felted, reflexed in flower, "loosely clasping in fruit" (Linton). Petals rather large, narrowly-obovate, with a short claw, of a peculiar deep pink; filaments pink, longer than the red styles. "Drupelets few, rather large, cæsious" (Linton).

Frequent in hedges in a district south of Ashbourne, comprising the adjoining parishes of Osmaston, Shirley, Yeaveley, Edlaston, Brailsford, Hulland, &c. Flowering in July and onwards.

Differs from *R. diversifolius* by its weaker stem-armature, thinner leaflets, long flowering branches; straggling panicle, the branches of which are almost divaricate; and its narrower and deeply-tinted petals.

A NEW TREE SENECIO FROM TROPICAL AFRICA.

By Edmund G. Baker, F.L.S.

Senecio (Arborescentes) **Keniensis**, n. sp. Arbuscula alt. 15–25–30-pedalis, caule simplici erecto versus apicem interdum semel vel bis dichotome ramoso, ramulorum apicibus foliis rosulatim coronatis, foliis non visis, inflorescentiæ bracteis supremis ligulatis 1–2 poll. longis, bracteis mediis lanceolatis acuminatis ad extremitates attenuatis amplexicaulibus 2–3 poll. longis versus apicem plus minusve lanatis, bracteis inferioribus majoribus 6–8 poll. longis apice acutis vel subobtusis margine pubescentibus haud serratis superne versus basin plus minusve lanato-pubescentibus, capitulis hemisphæricis multifloris in paniculis ovoideis dense albo-lanatis dispositis, pedicellis ¼–½–1 poll. longis inferioribus ad apicem

recurvatis, involucri foliolis 30 vel pluribus exterioribus ligulatis acuminatis ½–¾ lin. latis ¾ poll. longis interioribus superne quam inferne latioribus oblongis vel ovatis acuminatis circiter 2 lin. latis omnibus glabratis ad apicem pubescentibus, calyculi foliolis anguste linearibus ciliatis, floribus radii circiter 10-15 ligula lineari involucro fere duplo longiore, fl. disci tubo superne cylindrico-dilatato ad basin attenuato, styli ramis recurvatis truncatis, acheniis glabris longitudinaliter costatis.

Hab. Equatorial Africa. Mt. Kenia, Hohnel Valley, *Dr. J. W. Gregory*, July, 1893, alt. 13–14,000 ft. Herb. Mus. Brit.

Inflorescence about 1 ft. long, possibly longer. Capitula ¾–1 in. broad. Lower bracts 6–8 in. long, about 2½ in. broad, the broadest point being one-third of the length from the base. The bracts are traversed by a thick midrib; the margins are entire or obscurely crenate.

Dr. Gregory tells me the *Senecio* grows to a height of 25–30 ft., the stem attaining a diameter of a foot or more. It was found growing on the rocky sides of valleys, in sheltered situations, at a height of 13,000–14,000 ft., on the south-west side of the mountain, associated with *Lobelia Gregoriana* (see p. 66).

The leaves are large (rather over 1 ft. long), ovate, unlobed, extremely woolly, with an acute apex, the lamina running decurrently down the petiole (and thus being markedly different from the base of the leaves of *Senecio Johnstoni* Oliv., which are cordate), and form crowded rosettes, which crown the ends of the branches. The rosettes are about 2 ft. across. The panicle of flower-heads (about 1 ft. long) hang down below the leaves. In connection with the altitude at which this plant was collected, it is interesting to notice that *S. Johnstoni* on Mt. Kilimanjaro, while reaching 14,000 ft., comes down as low as 8,500 ft. The wood is very light, and apparently of no economic use, except for burning. The best description of the upper portion of the stem, that is, the portion just below where the leaves are borne, is that it resembles an old worn-out "bass broom," it being thickly covered with stiff fibres, 1¾ in. long (fibro-vascular bundles), and other remnants of the leaf-base; lower down it becomes strongly ridged, lower down still the ridges fall off, leaving a smooth cylindrical stem.

This interesting addition to the tree Senecios is allied to the plant which Mr. Johnston gathered on Mt. Kilimanjaro, described by Prof. Oliver (*Trans. Linn. Soc.* ser. ii. Bot. vol. ii. p. 340, t. 60). It is much more nearly allied to this plant than it is either to *S. gigas* Vatke, from the mountains of Abyssinia, or to *S. Mannii* Hook. fil., from the Camaroons.

I have compared *S. Keniensis* with type-specimens of *S. Johnstoni*, and find that it differs principally in having the panicles much more densely lanate, rather more congested, and containing fewer slightly larger capitula. The bracts of the involucre are more numerous, and the exterior bracts are longer and narrower than the interior. The larger bracts of the inflorescence, specially if we take those 6–8 in. long, are different in *S. Keniensis*. They are broadest about one-third of their length from the base, and from

thence taper to the apex; and they are not serrate, while those of *S. Johnstoni* are oblanceolate and serrate (this only applies to the larger bracts).

S. gigas Vatke has pinnatifid leaves and much smaller capitula, with fewer broadly linear bracts. The other distinctly arborescent species, *S. Mannii*, growing from 15 to 25 ft. high, is perfectly distinct from any of the species just mentioned—the capitula being about 6-flowered.

THREE NEW BRAMBLE FORMS.

By the Rev. Augustin Ley, M.A.

Rubus nemoralis Müll., var. Silurum, n. var. Stem moderately strong, arching, angular, with flat or slightly concave faces, glabrous or nearly so. Prickles usually confined to the angles, declining from a compressed and dilated base, short or of medium length. Leaves quinate, *flat*, the leaflets not imbricate, basal elliptic, intermediate obovate-elliptic, *terminal broadly ovate-elliptic, rather shortly acuminate*, green on both sides, upper surface with very few scattered hairs, under with stiff short hair; veins impressed above, prominent below. Edges waved; serration rather coarse, teeth pointing forward, triangular, acute, the sinus rounded. Panicle with ternate or simple leaves, pyramidal, with 2–3 ascending branches, *disposed so as to form a flat open pyramid;* ultra-axillary part cylindrical, with 1–4-flowered branches. Rachis wavy below, straight above, with short declining prickles, no acicles or glands; upper part with short hair, scarcely felted. Sepals reflexed in flower and fruit, broadly ovate, with a short point, felted. Petals broadly ovate, contiguous, light pink; stamens white, exceeding green styles. Flowers always cup-shaped, never flat. Fruit freely formed, orbicular.

The flat leaves, and flat, often broadly pyramidal panicle, the bright green of the whole plant, and the impressed veins of the nearly glabrous not shining upper surface of the leaves are marked features. In distinction to typical *R. nemoralis* Müll. should be also noticed the terminal leaflet broader below, more acuminate, with coarser toothing; the lower branches of the panicle not lengthening, so that the panicle remains pyramidal throughout the season, and the rachis less hairy and not felted.

Woods and thickets in hilly, heathy situations. Lyonshall Park Wood; Shobdon; woods near Presteign; and Dorstone, Herefordshire; all these stations are in the north and west of the county. Aberedw, Rhayader, and Boughrood, Radnorshire; also between Llandrindod and Llanbir, Radnorshire, *Rev. W. H. Purchas!* Llanwrtyd and Abergwessin; Aberelan; and near Brecon, Brecon-shire. Head of Llwchwr Valley, Carmarthenshire. Tylwch and Llangurig, Montgomery. Dyffryn Castle and Tregaron, Cardigan. Bettws-y-Coed, Carnarvonshire. Shapwick Moor, North Somerset, *Rev. R. P. Murray!*

The plant above described has been under observation for a

series of years, and has had various names suggested for it. It is due to the suggestion of the Rev. W. Moyle Rogers that it is now subordinated to *R. nemoralis* Müll. as a variety, a suggestion in which I heartily concur.

Rubus curvidens, n. sp. Stem tall, arching, angular, hairy; prickles not confined to the angles, stout, declining from compressed dilated base, with few acicles and stalked glands. Leaves large, quinate-digitate or pedate; stalks strongly armed with falcate prickles and a few acicles. Leaflets long-elliptic-obovate, *often with nearly parallel sides*, green on both sides, with scattered hairs above, more hairy on the veins beneath. Serration *coarsely crenate-serrate, with the larger teeth conspicuously recurved;* petiolule of the terminal leaflet one-third to one-fourth of its length; basal leaflets nearly sessile, not imbricate; all the leaflets of nearly the same shape. Panicle often very large, cylindrical. blunt-topped, sometimes leafy to top, but often with long ultra axillary part, compound, branches ascending, the uppermost sometimes becoming patent, with ternate or simple leaves. Rachis *straight, usually strongly armed with declining prickles*, the upper part hairy and grey-felted, *with many slender acicles and unequal stalked glands.* Sepals grey-felted, aciculate and setose, ovate-acuminate, reflexed after flowering. Petals large, pink: stamens greenish white, connivent, exceeding styles.

The large and long, often nearly parallel-sided leaflets, with coarse serration, and backward curved principal teeth; the large and long panicle, with armature variable, but often abundant in prickles, acicles, and stalked glands, are characteristic points in this plant. It seems to stand best near to *R. Boræanus* and *R. anglosaxonicus.*

Abundant in several districts of Herefordshire, in woods and thickets. Castle-meadow Wood, Sellack. Near Athelstane's Wood, Little Dew Church. Belmont, near Hereford. Dinmore Woods; and near Wormesley. All these stations are in Herefordshire. Thicket by the Cennen river, near Carreg Cennen, Carmarthenshire; clearly the same plant.

I have had this plant under observation since about 1880, and have received varying but always unsatisfactory suggestions from the authorities. Hence a name and description appear requisite.

Rubus Borreri Bell-Salt., var. virgultorum, n. var. Stem rather low, arching, bluntly angled, glabrous or nearly so, with tubercles bearing acicles, *sometimes numerous, at other times few;* stalked glands very few. Prickles short, stout, declining or deflexed, *usually far less numerous than in the type*, from a compressed dilated base. Leaves usually quinate; leaflets *green on both sides*, smooth above, with scattered hairs below, all roundly elliptic, very shortly acuminate, the serration of the edges rather coarse, *nearly simple*, teeth all pointing forward; petioles and petiolules *short, especially those of the basal leaflets, giving to the leaves a crowded growth.* Panicle-rachis with a dense clothing of stalked glands and acicles, its larger prickles usually very few, declining; sepals spreading in flower, reflexed in fruit; petals pinkish, stamens white, exceeding pale green styles.

Remarkable for the very variable clothing of prickles, acicles and stalked glands both on stem and rachis, in this character resembling *R. Drejeri* Jensen; and for its closely-set, roundish leaflets, contrasting in this point with the var. *dentatifolius* Briggs. The rachis at times resembles that of *R. infestus* W. in its numerous, strong, deflexed prickles. Related to *R. infestus* W., but clearly nearer to *R. Borreri* Bell-Salt., under which it is best placed as a variety.

Open rough pastures and coppices. The spots in which this bramble delights are termed "leasows" in this part of Herefordshire, that is, rough pastures, interspersed with pollard ash, and other trees. Hence the name "virgultorum" is not deemed inappropriate.

Localities. Scattered over several square miles in the country lying to the east of Leominster; Far Heath Coppice, Kimbolton; Tomlinshill and Yell's Wood; Thornbury; Pedwardine Wood, Brampton Bryan; all these stations in Herefordshire. Harley Heath, Worcestershire.

NOTES ON KENTISH PLANTS OBSERVED DURING 1893.

By the Rev. E. S. Marshall, M.A., F.L.S.

I made a few day-excursions into the county during May and June of last year, sharing three of them with Capt. Wolley Dod, R.A., who has recently done so much good work in its north-western districts, and to whose keen and accurate observation I am considerably indebted. The first half of July was mainly spent in working from Ashford as a convenient centre. Although few parts of England have been more carefully explored than Kent, there is still evidently a good deal of scope for further research, especially in "critical" genera; and I publish the details which follow in the hope of arousing fresh interest in an unusually rich flora, which of late years has hardly received as much attention as it deserves.

Plants marked with an asterisk are additions to the record in *Topographical Botany*, ed. 2, for vice-counties 15 and 16 (E. and W. Kent). Those to which a dagger is affixed are believed to be previously unrecorded for the British Isles. My best thanks are due to Mr. Arthur Bennett, as well as to the Rev. W. Moyle Rogers and Dr. Focke, for much kind help.

Glaucium flavum Crantz. Grain Spit, near Port Victoria, 16.*

Nasturtium palustre DC. Dry moat at Westenhanger Castle, 15.*

[*Senebiera didyma* Pers. Casual, in a farmyard between Paddlesworth, and Elham, 15.*]

Lepigonum salinum Fr. and var. *neglectum* (Kindb.) both grow near Port Victoria. The latter has been noticed in West Kent by several botanists; but neither this segregate nor *L. marginatum* Koch (also found at Port Victoria) is given for 16 by Watson.

Erodium cicutarium L'Hérit. A very hairy and glandular variety

with pale pink flowers (which, I think, occurs between Sandwich and Deal) is plentiful in sea-sand east of Littlestone. Mr. Bennett remarks:—"This appears to be the var. *glandulosum* Bosch, *Fl. Bat.* p. 55 (1850), and I suppose is the same as Boreau's *E. pilosum* (*Fl. du Centre*, p. 109)."

Rubus fissus Lindley. Wood near Paddlesworth, 15.*

R. leucostachys × *rusticanus*. About Hawkinge and Paddlesworth, in several spots, 15.*

R. lasioclados Focke. Borders of a wood near Paddlesworth, 15.† This has been referred by Mr. Moyle Rogers, in his recent 'Notes on Rubi,' to *leucostachys*, of which, however, the living plant did not greatly remind me. The woolly clothing of the stems, and especially of the panicle-branches, is very remarkable. This subspecies is described (from near Aix-la-Chapelle) in *Syn. Rub. Germ.* pp. 198–9. Dr. Focke there says:—"Differt a R. Winteri typico: turionibus dense pilosis, inflorescentiæ ramulis, pedicellis calycibusque tomentoso-hirsutis, foliolis subtus molliter tomentoso-pilosis, floribus albis. Foliola terminalia lata sæpe suborbicularia, inflorescentia aculeis validis crebris armata."

R. carpinifolius Wh. & N. A plant with very showy inflorescence, occurring at Willesborough Lees, 15,* seems to be best placed here; the barren stems appear to be quite typical.

R. pulcherrimus Neuman. Wood near Paddlesworth; near Sandling Park; and plentifully at Willesborough Lees, 15.*

R. adornatus P. J. Muell. Near Sandling Park, 15.*

R. Lejeunei Weihe. A bramble which grows in great plenty about Sandling Junction and Westenhanger, as well as at Kennardington and Willesborough Lees, 15,* is considered by Mr. Rogers to be identical with Surrey plants so named by Dr. Focke; but the latter hinted at a hybrid origin for the specimen sent to him, which I feel sure is not correct. Whether or no the above name can stand for it, the form in question is a well-marked and abundant one over a considerable area.

R. foliosus Weihe. Woods near Paddlesworth and Lyminge, 15.*

R. Bellardi Weihe. Copse bordering on Sandling Park, 15.*

Besides the above, three or four striking brambles are still undetermined; one of these, from the same station as *Bellardi*, being apparently near *R. Wahlbergii* Arrh. Three seeming hybrids of *R. cæsius* L. were met with. The first, from a copse on the chalk between Paddlesworth and Folkestone, looks like a cross with *R. horridus* (*dumetorum ferox*); another, from a stream-side between Smeeth and Westenhanger, which has subterete, weak trailing stems, thickly beset with short straight prickles and somewhat glandular, bright rose-coloured petals, and stamens falling short of the styles, the leaves being thin and very rugose, may, in Dr. Focke's opinion, be due to a union with *R. rosaceus* or one of its allies; and the third, also a trailing, rosy-flowered little plant from a wood near Smeeth Station, but distinct from the other, is called by him "a corylifolian" (*i. e.* "cæsian") form near my *R. Laschii*.

Epilobium roseum Schreb. Stream-sides between Westenhanger

and Smeeth Stations, copse at Willesborough Lees, and near Headcorn, 15.*

E. Lamyi F. Schultz. Abundant and clearly native in a copse at Willesborough Lees, 15.

E. montanum × *obscurum* and *E. obscurum* × *parviflorum*. With the last. — *E. obscurum* × *palustre*. By several ponds near Headcorn. — *E. parviflorum* × *roseum*. Between Westenhanger and Smeeth Stations, 15.*

Eryngium maritimum L. Near Port Victoria, 16.*

Galium sp. ? A small bedstraw which I found in some quantity on the high chalky table-land near Paddlesworth, 15,† and supposed, at the time of its discovery, to be a variety of *G. sylvestre* Poll., does not agree well with any British or foreign specimens at S. Kensington, nor have Mr. Bennett and others as yet succeeded in identifying it. While bearing some resemblance to *G. sylvestre* and to *G. erectum*, it will probably require a new name, unless further research should show it to be already known on the Continent. Having neglected to send home roots, I hope to collect this interesting plant again, and study its characters more closely. From what I know of the surroundings, the theory of a hybrid origin seems to me unlikely; but the fruit was too young to be of much use.

Myosotis palustris With., var. *strigulosa* (Reichb.). Strongly-marked, in ditches about a mile south-west of Charing, 15.

Bartsia Odontites Hedw., var. *verna* Reichb. Abundant in a small spinney on the chalk above Elham, 15.

Chenopodium murale L. A small, prostrate plant, found on shingly ground near the sea between Littlestone and Dymchurch, 15, is considered by Mr. Bennett to be var. *humile* Wallroth; of this I have not yet seen a description.

C. rubrum L., var. *pseudobotryoides* Watson. On shingle, between Sandwich and Pegwell Bay, associated with *Arenaria serpyllifolia* var. *glutinosa*, *Medicago minima*, and *Festuca ambigua*.

Salicornia appressa Dumortier. On mud, near Littlestone-on-Sea, 15†; growing in good quantity over a very restricted area. I first noticed this little plant in September, 1891, and suggested the above name for it in *Journ. Bot.* 1892, p. 179. Having had an opportunity of studying it earlier in the season, I now feel pretty certain of its identity, though I have not yet succeeded in getting type-specimens to examine. The very characteristic and constant habit (I find no "shading-off" into other forms) appears to warrant the author in allotting specific rank to it in his *Opuscules de Botanique*, where in the course of his remarks on Belgian *Salicorniæ*, he says:—"La forme la plus excentrique est celle que, dans notre Prodrome, nous avons désignée sous le nom de *S. prostrata* γ *? appressa* et que M. Crépin, dans la dernière édition de son *Manuel*, vient d'appeler *S. herbacea* var. *moniliformis* à cause de ses épis parfois moniliformes. Cette plante nous paraît s'éloigner sensiblement de la *S. prostrata* de Pallas et former une espèce distincte, comme nous le présumions déjà il y a 42 ans. Nous la désignerons sous le nom de *S. appressa*. Sa tige est humifuse et ses rameaux sont entière-

ment appliqués sur le sol; elle affecte cette disposition depuis sa naissance jusqu'à sa fructification sans se relever jamais. Ses rameaux forment un évantail triangulaire comprimé des deux côtés; ses entrenœuds sont cylindriques; ses épis cylindriques ou moniliformes. Nous donnerons sa diagnose ainsi que des principales formes en nous réservant d'y revenir.

"1. *S. stricta* Nob., herbacea, caule ramisque erectis strictis fastigiatis.

"2. *S. procumbens*, herbacea, caule adscendente, ramis subsimplicibus, internodiis obconicis.

"3. *S. prostrata*, herbacea, caule prostrato, ramis trifariis adscendentibus, spicis cylindricis obtusis apice depressis.

"4. *S. appressa* Nob., herbacea, caule ramisque humifusis appressis e radice trifariam flabellatis ramosissimis, internodiis cylindricis, spicis acutis."

These are stated to have the following synonyms:—

"1. *S. annua* Sm. Engl. Bot. p. 415; *S. herbacea* Sm.

2. *S. herbacea* L. Suec. p. 1; *S. procumbens* Sm. Engl. Bot. t. 2475; *S. herbacea* β. *procumbens* Babgt. Man. p. 288.

3. *S. prostrata* Pall. Halophyt. p. 8, t. 3.

4. *S. prostrata* γ. *? appressa* Dmrt. Prodr. p. 23; *S. herbacea* forma *moniliformis* Crép. Man. ed. 2, p. 276."

The prevailing glass-wort on Romney Sand, close to the station for *S. appressa*, agrees well with the above description of *S. stricta*. That which I have referred to *S. appressa* seems to me to answer very closely to the above description of this species, and is quite different from the ordinary prostrate or procumbent forms of our coast.

Salsola Kali L. Grain Spit, near Port Victoria, 16*; pointed out to me by Capt. Wolley Dod.

Polygonum Raii Bab. With the last, 16*; scarce and small, but the dry summer and early date (June 28th) may account for this. The name *P. Roberti* Loisel., according to Professors Babington and Lange, is an aggregate one, including forms of *aviculare* as well as *Raii*.

P. maculatum Trimen & Dyer. Field near Westenhanger, 15.*

Carpinus Betulus L. Frequent and evidently a true native in the south-east of the county, especially on the clay, 15.*

Orchis latifolia L. (segregate). Eynsford, 16.*

Habenaria chloroleuca Ridley (segregate). Woods about Halling, 16.* Well known as a plant of W. Kent, though not specified as such by Watson.

Juncus effusus × *glaucus* (*J. diffusus* Hoppe). Plentiful near New Romney, towards Dymchurch; also seen about Headcorn, 15, with both parents. Another rush, found near Charing, though very similar, has a shorter and more contracted inflorescence, and appears to be the offspring of *conglomeratus* and *glaucus*, which accompany it; I did not see *effusus* near. The suggested hybrid may prove to be really not uncommon, but I am unaware of its having been recognised either in this country or abroad.

Sparganium neglectum Beeby. About Ashford, Smeeth, Westenhanger, Headcorn, and Staplehurst, 15.* Apparently more frequent than restricted *S. ramosum*.

Potamogeton acutifolius Link. Ditches near Appledore Station, towards the village, 15.*

P. Friesii Rupr. Pond near Marden, 16.* Mr. Bennett has seen W. Kent specimens in herb, F. J. Hanbury.

P. Berchtoldi Fieber. In two adjoining pools, about half-a-mile east of Marden Station, 16†; determined by Mr. Bennett, who places it under *P. pusillus* as a variety, remarking that the leaves of the Marden plant are narrower and shorter than in Fieber's description. Its habit of growth is strikingly different from that of ordinary *pusillus*, which is frequent in the district, the pools being nearly choked with a dark green (almost black), tangled mass. On July 20th the fruit was ripe and beginning to drop, *pusillus* being scarcely in full flower at the time. I append some extracts translated from the original publication in Fieber's *Die Potamogeta Böhmens* (1838), pp. 40, 41. The plant is figured there, t. 4, fig. 21.

"Stems 2–2½ ft. long, filiform, stouter than in the last [*P. pusillus*], roundish, compressed, branched above, striate. Internodes 2–3 in. long, shorter in small and much-branched specimens, the branches spreading in all directions. Leaves 2 in. long or rather more, tapering to a fine point, or blunt with a fine capillary point. All the leaves 3-ribbed from the base, the midrib with two rather distant longitudinal nerves. The upper stem-leaves are sometimes 1 in. long, dilated above, blunt, densely cellular for one-third of the leaf's length downwards, the ribs rather stronger than usual, losing themselves in this cellular space. A gland on each side at the base of the leaves, which half-clasp the joints of the stem. Peduncle 9–12 lines, more rarely (in branching plants) 6–8 lines long, and 3–4 times the length of the 6–8-flowered spike, which is 2–2½ lines long. Spike 3 lines long in fruit. Flowers larger than in *P. pusillus* and *P. trichoides*. Sepals obliquely elliptic, crenate, their sides semiorbicular. Fruit nearly one-fourth larger than in *P. pusillus* (1 line long), thick, roundish, irregularly 5-angled, furnished with very small caruncles [tubercles?], which appear particularly distinct when the fruit is in a dry state. Dorsal keel finely caruncled, especially towards the base. Lateral keels angular. Nut roundly 5-angled, pointed at the base and top. Cross-section ovate, dorsal keel semiorbicular, prominent. Lateral keels divided, rounded."

The forms described are as follows:—

"α. *mucronatus* Fieber. Leaves blunt, with a fine capillary point.
a. *ramosissimus* Fieber. Internodes 9 lines long, the lower ones shorter, branching from all the leaf-axils. Stem-leaves 2 in. long, 1 line broad. Peduncle 6–8 lines long.
b. *simplex* Fieber. Stem mostly simple, slightly branched above. Internodes 1½–2 in. long. Stem-leaves 1½ in., peduncle 9–12 lines long.
P. pusillus β. Cham et Schl. Linnæa, 2, p. 172.

β. *acuminatus* Fieber. Leaves tapering to a point. Stem elongate, branched above. Internodes 2–2½ in. long. Peduncle 9–12 lines, spike 3 lines long.

P. pusillus Fl. d. 1451! — *P. pusillus* α. *major* M. et K. d. fl. p. 857."

In the key (p. 10) the diagnoses run :—

"Leaves acuminate, 3-ribbed. Midrib simple. Peduncle twice as long as the spike. Sepals semiorbicular or reniform. Nut obovate. Dorsal keel sharply angled . . *pusillus* L.

Leaves with a capillary or small point, 3-ribbed. Midrib with two adjacent lateral nerves. Peduncle 3–3½ times as long as the spike. Sepals obliquely elliptic, crenate above. Nut roundly 5-angled, Dorsal keel semiorbicular, prominent . . . *Berchtoldi* Fieber."

Carex paludosa Good. By the Darent, between Farningham and Eynsford, 16.*

Alopecurus fulvus Smith. By a pond near Staplehurst, 15.*

Agrostis alba L., var. *gigantea* Meyer. Wet ditch bordering a wood, near Smeeth Station, 15.

Glyceria Borreri Bab., var. HUMILIS mihi, n. var. This curious little grass is plentiful on dried-up (or drying) mud, close to the station at Port Victoria, 16. When I first noticed it, in 1892, I did not recognise it as belonging to this species, which is frequent in the neighbourhood. Prof. Hackel, to whom specimens were sent, named it "*G. Borreri*, var." A more careful examination on the occasion of my second visit led me to the conclusion that it had fair claims to rank as a named variety, which may be differentiated by the following characters :—Annual, tufted, quite prostrate; inflorescence usually short and compact; leaves more or less involute; plant about 3–8 in. across (measuring from the extremities of the flowering-stems).

Festuca elatior × *Lolium perenne* (*F. loliacea* Huds., *L. festucaceum* Link). Abundant in a moist meadow near the Darent, associated with the parent species, above Eynsford, 16.

Lolium perenne L. A stiff-growing plant, found in fields on the chalk between Folkestone and Paddlesworth, has elicited from Prof. Hackel the following suggestive note :—"*L. perenne*, a remarkable form, in habit and spikelets quite like *L. rigidum* Gaud., but surely perennial [Yes.—E. S. M.], while *L. rigidum* is an annual. The existence of this form may prove that *L. rigidum* belongs specifically to *L. perenne*, of which it is the annual form."

Agropyron junceum Beauv. Grain Spit, near Port Victoria, 16.*

FIRST RECORDS OF BRITISH FLOWERING PLANTS.

COMPILED BY

WILLIAM A. CLARKE, F.L.S.

(Continued from p. 114.)

Mentha rotundifolia Huds. i. 221 (1762). **1670.** "By the Rivers side at Lydbrook near Rosse in Herefordshire plentifully."—Ray, Cat. 208.

M. alopecuroides Hull. Brit. Fl. 126 (1799). **1798.** "In Kent and Essex, but rare."—Sole, Menthæ, t. 4 ("M. rotundifolia").

M. longifolia Huds. Fl. Angl. i. 221 (1762). *M. silvestris* L. Sp. Pl. ed. 2, 804 (1762). **1633.** "It groweth in divers wet & moist grounds."—Ger. em. 685 ("Mentastrum—Horse-Mint").

M. piperita L. Sp. Pl. 576 (1753). **1696.** "Found by Dr. Eales in Hartfordshire . . . . since by Mr. Dale in Essex."—Ray, Syn. ii. 124.

M. pubescens Willd. Enum. 608 (1809). **1798.** Sole's *M. palustris* and *M. piperita* var. *sylvestris*, both found by him in Somersetshire, the latter at Lyncombe, near Bath.—Sole, Menthæ, 13 & 53.

M. hirsuta Huds. Fl. Angl. 223 (1762). **1548.** "The red Mynt that groweth by water sydes and is called of some Horse Mynt."—Turn. Names, G iij, back.

M. sativa L. Sp. Pl. ed. 2, 805 (1763). **1696.** "Invenit D. Tilleman Bobart juxta rivulos quosdam ad late montis Shotover prope Oxonium."—Ray, Syn. ii. 124. See Linn. Soc. Trans. v. 207.

M. rubra Sm. in Linn. Soc. Trans. v. 205 (1800). **1724** "In Peckham fields."—Dill. in Ray, Syn. iii. 232 ("M. verticillata").

M. gracilis Sm. in Linn. Soc. Trans. v. 210 (1800). **1798.** "I found this by the side of a brook near Bradford, Wilts, in the year 1772."—Sole, Menthæ, 38.

M. pratensis Sole, Menthæ, t. 17, 39 (1798). **1798.** "I found this plant in the year 1789 in wet places in the New Forest."—Sole, *l. c.* 40.

M. gentilis L. Sp. Pl. 577 (1753). **1798.** "It grows spontaneous in pools and brooks between Mole and Llanrwst, North Wales, whence I brought it twenty years ago."—Sole, Menthæ, 42 ("M. rubra").

M. arvensis L. Sp. Pl. 577 (1753). **1570.** "Calamintha aquatica Belgarum . . . . inter veruacta & sata ripasque agrorum, pratorum, in Belgis provenit & in Anglia."—Lob. Ad. 217. *cf.* Ger. em. 684, Park. Theatr. 36, &c. Turner's "Corne mint," Names, B vii, and Herb. i. 101, *may* be this, but Mr. Britten refers that to *Calamintha arvensis* Lam.

M. Pulegium L. Sp. Pl. 577 (1753). **1562.** "Penny ryall groweth . . . . besyde hundsley [Hounslow] upon the heth."—Turn. ii. 107.

Lycopus europæus L. Sp. Pl. 21 (1753). **1562.** "Water horehound . . . groweth . . . about water sydes," &c.—Turn. ii. 135, back.

Origanum vulgare L. Sp. Pl. 590 (1753). **1548.** "Our commune organ . . . called . . . in some places of England wylde mergerum."—Turn. Names, E vij, back.

Thymus Serpyllum L. Fl. Suec. ed. 2, 208 (1755). **1548.** "Wylde tyme . . . in sandy fieldes and bare groundes."—Turn. Names, G ij.

T. Chamædrys Fr. Nov. i. 35 (1814). **1853.** Observed in Cambs, and distinguished from next sp. by C. C. Babington.—Ann. & Mag. N. H. ser. 2, xi. 431. ? First distinguished by George Jorden, of Bewdley. See Phytol. iv. **1142.**

Calamintha Clinopodium Benth. in DC. Prod. xii. 233 (1848). **1548.** "Groweth muche aboute Syon in Englande."—Turn. Names, B vij.

C. arvensis Lam. Fl. Fr. ii. 394 (1778). *C. Acinos* Clairv. apud Gaud. Fl. Helv. iv. 84 (1829). **1601.** "Acinos Anglicum . . . in Anglia observabam . . . ad Ill. Dn. de Cobham."—Clus. Rar. i. 354. But see note under *Mentha arvensis*.

C. parviflora Lam. Fl. Fr. ii. 396 (1778). *C. Nepeta* Savi, Fl. Pis. 63 (1798). **1629.** Johns. Kent, 5 ("C. pulegii odore").

C. officinalis Moench, Meth. 408 (1794). **1632.** Johns. Kent, 16.

C. sylvatica Bromf. in E. B. S. 2897 (1845). **1843.** Discovered by Dr. Bromfield, 29 Aug. 1843, near Newport, Isle of Wight.—Phytol. i. 768, & ii. 49.

Salvia Verbenaca L. Sp. Pl. 25 (1753). **1538.** "Horminū sylvestre . . . a nostris . . . arbitror dici Clare aut wylde clare."—Turn, Lib. (under "Orminum"). "In the fieldes of Holburne neere unto Graies Inne."—Ger. 628 (1597).

S. pratensis L. Sp. Pl. 25 (1753). **1699.** "In septo Cobhamiano Essexiæ (*sic*) in Anglia D. Watsius detexit."—Morison, Hist. Ox. iii. 393.

Nepeta Cataria L. Sp. Pl. 570 (1753). **1551.** "Catmint . . . . groweth far from cities and tounes in hedges and in stony groundes."—Turn. i. 41 (101).

N. Glechoma Benth. **1597.** *Hedera terrestris*, Ale-hoofe.—Ger. 705.

Scutellaria galericulata L. Sp. Pl. 599 (1753). **1576.** "Rivularum & fluminū ripas & depressos agrorum margines Londinensis . . . sequitur."—Lob. Obs. 186. "This I found in a waterie lane leading from the Lord Treasurers house called Thibals unto the backside of his slaughter house."—Ger. 387 (1597).

S. minor Huds. Fl. Angl. i. 232 (1762). **1597.** "I found it growing upon the bog or marrish ground at the further end of Hampsteed heath, and upon the same heath towards London, neere unto the head of the springs that were digged for water to be conveied to London 1590, attempted by that carefull citizen Sir John Hart, Knight, Lord Maior of the Citie of London: at which time my selfe was in his Lordships company, and viewing for my

pleasure the same goodly springs, I found the said plant, not heretofore remembered."—Ger. 466 (not the figure).

Prunella vulgaris L. Sp. Pl. 600 (1753). **1548.** "Groweth about Syon, seven myles above London."—Turn. Names, G v, back ("Symphytum petreum").

Melittis Melissophyllum L. Sp. Pl. 597 (1753). **1650.** "Found in Mr. Champernons wood, by his house at the hill side neere Totnes in Devonshire. Mr. Heaton."—How, Phyt. 74.

Marrubium vulgare L. Sp. Pl. 583 (1753). **1548.** "Horehound . . . groweth aboute townes and villages."—Turn. Names, E iij.

Stachys Betonica Benth. Lab. 532 (1832). **1548.** "Groweth muche in woddes and wylde forestes."—Turn. Names, B v.

S. germanica L. Sp. Pl. 581 (1753). **1633.** "My kinde friend Mr. Buckner an Apothecary of London the last yeare, being 1632, found [this] growing wilde in Oxfordshire in the field ioyning to Witney Parke a mile from the Towne."—Ger. em. 696.

S. palustris L. Sp. Pl. 580 (1753). **1597.** "Almost everie where, especially in Kent about South fleete neere to Gravesend, and likewise in the medows by Lambeth neere London."—Ger. 852.

S. ambigua Sm. E. B. 2089 (1809). **1809.** Found "by Mr. W. Borrer and Mr. W. J. Hooker near Loch Carron and in Glen Ely in the North of Scotland, in September 1808."—E. B. *l. c.*

S. sylvatica L. Sp. Pl. 580 (1753). **1629.** Johnson, Kent, 8 ("Galeopsis vera Dios.").

S. arvensis L. Sp. Pl. ed. 2, 814 (1762). **1632.** "Sideritis alsines trixaginis foliis, Bauh."—Johns. Kent, 23. Compare Ger. em. 699, par. 5 ("I first found it August 1626 . . . . not far from Greenhithe in Kent," &c.).

Galeopsis Ladanum L. Sp. Pl. 579 (1753). **1629.** "Ladanum segetum, Lugd."—Johns. Kent, 2. Compare Ger. em. 699, par. 7.

G. angustifolia Ehrh. Herb. 137 (1789). **1847.** "G. Ladanum *β* canescens. Near Southampton on shingles."—Bab. Man. ed. 2, 250.

G. dubia Leers, Fl. Herb. 133 (1775). *G. ochroleuca* Lam. Dict. ii. 600 (1786). **1670.** "In Occidentali comitatûs Eboracensis parte, v. g. circa Wakefield, Darfield, Sheffield, &c."—Ray, Cat. 283.

G. speciosa Mill. Dict. ed. 8, n. 3 (1768). *G. versicolor* Curt. Fl. Lond. vi. 38 (1794). **1641.** "Cannabis spuria flore pallido labro purpureo elegante. In fimetis & ruderibus."—Johns. Merc. Bot. pars alt. 18. "At Marish in Cambridgeshire and in Kighley Yorkshire plentifully."—Merrett, 19 (1666).

G. Tetrahit L. Sp. Pl. 579 (1753). **1597.** "Especially in earable lande, as I have often seene in the corne fieldes of Kent, as about Graues ende," &c.—Ger. 573.

Lamium amplexicaule L. Sp. Pl. 579 (1753). **1597.** "In gardens among pot herbes," &c.—Ger. 493.

L. intermedium Fr. Nov. i. 105 (1828). **1837.** Distinguished by Dr. N. Tyacke near Edinburgh in 1836.—First Report Bot. Soc. Edinb. (1837), p. 27. See E. B. S. 2914.

L. hybridum Vill. Fl. Dauph. i. 250 (1786). *L. dissectum* With. Bot. Arr. ed. 3, 527 (1796). **1666.** "In the Kings New Garden near Goring-house."—Merrett, 69.

L. purpureum L. Sp. Pl. 579 (1753). **1548.** "Red Archaungel . . . groweth in hedges."—Turn. Names, D ij, back.

L. album L. Sp. Pl. 579 (1753). **1548.** "Dead nettle or whyte nettle . . . . groweth cōmōly in hedges."—Turn. Names, D vij, back.

L. Galeobdolon Crantz, Fl. Austr. ii. 262 (1763). **1597.** "I have found it under the hedge on the left hand as you go from the village of Hampsteed neere London to the church, and in the wood thereby," &c.—Ger. 568.

Ballota nigra L. Sp. Pl. 582 (1753). **1548.** "Groweth in hedges communely in every countrey."—Turn. Names, B iiij, back.

Teucrium Botrys L. Sp. Pl. 562 (1753). **1844.** Discovered by Thos. Ingall and Wm. Bennett "in a wild stony locality . . . . at the back of Box Hill in Surrey," 17 Aug. 1844.—Phytol. i. 1086.

T. Scordium L. Sp. Pl. 565 (1753). **1548.** "I heare say that it groweth . . . besyde Oxforde."—Turn. Names, G j, back. "In Oxfordshyre and in Cambridgeshyre in good plenty."—Turn. Herb. ii. 131 (1562).

T. Scorodonia L. Sp. Pl. 564 (1753). **1570.** "In sylvis Angliæ."—Lob. Adv. 210.

Ajuga reptans L. Sp. Pl. 561 (1753). **1548.** "Groweth in shaddowy places and moyst groundes."—Turn. Names, H. ij ("Consolida media").

A. pyramidalis L. Sp. Pl. 561 (1753). **1777.** "I am assured by the Rev. Doctor Burgess, of Kirkmichael, that it is a native of Scotland, but I have not yet learned the particular place of its growth."—Lightfoot, Fl. Scot. 303. See With. Bot. Arr. ed. 3, 516 (1796).

A. Chamæpitys Schreb. Pl. Verticill. Unilab. 24 (1773). **1551.** "It groweth . . . in good plenty in Kent."—Turn. i. 53 (132).

(To be continued.)

SHORT NOTES.

POTAMOGETON PRÆLONGUS × PERFOLIATUS ? — Among a series of Canadian Potamogetons sent me a few years ago by Prof. Macoun, of Ottawa, was one named "*P. prælongus* Wulf., Sicamore, B. Columbia." This I at first placed with *prælongus*, but later put it among *perfoliatus;* not satisfied with that, I put it by itself, with a query as to its suggested origin. To ordinary *perfoliatus* it bears little resemblance, except in the leaf-bases; but to the var. *Richardsonii* Ar. Benn. (v. *lanceolatus* Robbins, non Blytt) it comes very near in habit, but its peduncles are those of *prælongus*. In considering *prælongus* as one of its parents, the period of flowering has to be taken into account; but I have gathered *perfoliatus* in full flower the first week in June, in Norfolk, and a day later seen *prælongus* in flower, though not associated with the former. Dr.

Morong (*Mon. N. A. Naiadaceæ*) gives *prælongus* as "fruiting in June and July, and usually *withdraws its stems beneath the water as soon as the fruit is set*"; for *perfoliatus* he gives "July–September," not saying, however, whether that time is flowering or fruiting; probably both. Though a single specimen is far too little material to decide upon, one characteristic feature may be named, *i. e.*, the apex of the leaves are rounded, and one is split just as *prælongus* does when dried, but this may be only accidental here. Generally the specimen shows affinity with *prælongus* in its long peduncles, spikes (no fruiting spikes on the sp.), its sub-persistent stipules, and the apex of the leaves (?); with *perfoliatus* var., in its clasping leaves, and venation. I have another specimen from Methye Lake, lat. 57° (*J. M. Macoun*), that may also be this supposed hybrid; *P. perfoliatus* certainly grows in that lake, but I find no record of *prælongus*, though it occurs in the Athabasca river (about 58°, further north). This is only in bud, but its stipules are present, and the apex of its leaves is apparently slightly cucullate. I thought (before seeing fruiting specimens) that perhaps the western var. of *perfoliatus* might be this hybrid; but its fruit is decidedly that of *perfoliatus*, though rather larger than the eastern American forms. A series of specimens, with local observation, must decide whether my supposition is correct or not.—Arthur Bennett.

Potamogeton undulatus Wolfg. — To the distribution of this form may be added Ireland (Six-mile River, Co. Antrim, 5, 8, 82, *S. A. Stewart*). Shropshire; Ellesmere, in deep water, Sept. 1882, *W. E. Beckwith*. These seem to be nearest to the var. *Jacksoni* (cf. Fryer, *Journ. Bot.* 1891, p. 291). Another plant, gathered by Mr. Beeby, "R. Wey, Stoke, Surrey, Sept. 1882," may belong here, but the specimen is not sufficient to make sure it is so. Other specimens (very young) from Anglesea (Aug. 1888, *J. E. Griffith*) may also belong, and are very like some small specimens sent as "*P. perfoliatus* L." from America by Dr. Morong, and also resemble his *P. Mysticus*. For thirty years I have known *P. crispus* growing mixed with *P. perfoliatus* a few miles from Croydon, but I failed to detect anything that could be held as between them, last year; I shall hope to renew the search this summer. — Arthur Bennett.

Wilts Records.—The following new plants have been found in the county by myself and others, and duly verified since my notice in *Journ. Bot.* 1893, p. 23. My thanks for critical help are due to the same gentlemen as before, and also, as regards the Cryptogams, to Mr. James Saunders and Mr. Boswell:—*Rubus Sprengelii* Weihe. 11. Stourton, *Rev. R. P. Murray*.—*R. Borreri* Bell-Salt. 11. Stourton, *Murray*. — *R. fuscus* W. & N. 11. Stourton, *Murray*. — *R. rotundifolius* Blox. 9. Compton.—*Rosa farinosa* Rau. 8. Fugglestone.—*R. vinacea* Baker. 6. Laverstock; King's Manor.—*Valeriana officinalis* var. *sambucifolia*. 4. Chilton Foliat, *G. C. Druce*. 10. Alderbury. — *Gentiana Amarella* subsp. *axillaris* Murbeck. 5. Dean Hill. 6. Laverstock. 8. Stockton Down, *F. O. Earney* ("early state," as *præcox* is of *lingulata* Ag.). 10. Downton. — *G.*

uniflora Willd. (not *G. Pneumonanthe*, as recorded at above reference, "but the specimens are peculiar and monstrous," *Ar. Bennett*). 6. Pitton, *Henderson*. — *Mentha hirsuta* f. *subspicata*. 8. Fugglestone. — *Lamium purpureum* var. *decipiens* Sonder. 9. Compton.—*Ditrichum flexicaule* Schleich. 5. Whiteparish. 10. Whaddon.—*Barbula lævipila* Brid. 6. King's Manor. 10. Whaddon.—*Orthotrichum saxatile* Brid. 7. Salisbury.—*O. tenellum* Bruch. 10. Britford.—*Funaria fascicularis* Dicks. 5. Redlynch.—*Bartramia pomiformis*. 5. Hamptworth, *G. E. Dartnell*.—*Philonotis fontana* Brid. 5. Hamptworth. — *Bryum cæspiticium* L. 6. Milford. 10. Harnham.—*B. pseudo-triquetrum* Hedw. 10. Harnham.—*Mnium punctatum* Hed. 5. Whiteparish. 10. Alderbury, *Earney*.—*Polytrichum piliferum* Schreb. 5. Hamptworth, Landford.—*Thuidium abietinum* L. 10. Harnham ("a peculiar form"). — *Brachythecium glareosum* Bruch. 6. Pitton.—*Eurhynchium myosuroides* L. 5. Whiteparish. —*Hypnum exannulatum* Gümb. 5. Hamptworth. — *H. palustre* L. 10. Harnham.—*Frullania tamarisci* (Mich.) Dum. 5. Whiteparish. —*Jungermannia albicans* L. 5. Hamptworth. 9. Compton.

The following are new for Wilts S.:—*Rosa sylvestris* Lindl. 10. Bodenham.—*Anagallis cærulea* Schreb. 6. Petersfinger. 8. Warminster, *Earney*. 11. Mere, *Miss E. Baker*. — *Betula glutinosa* Fr. 5. Redlynch; 6. Laverstock; 8. Codford, *Earney*. 9. Compton. 10. Alderbury. — *Agropyron repens* var. *barbata* Duval-Jouve. 7. Stratford.—Edward J. Tatum.

Ranunculus acris as an irritant. — Prof. J. W. Harshberger writes in the *Botanical Gazette* for April:—"This species, preserved in alcohol for over a year, was distributed to a university class for study, and in doing this the fingers and hands were frequently immersed in the alcohol of an olive-green colour. A day or two afterwards an intense itching sensation was experienced. The softer skin between the fingers became red and covered with minute watery vesicles, or pustules, and after the inflammation had disappeared, the skin of the fingers began to crack, as if they were chapped. The symptoms were exactly similar, in my case, to the effects produced by contact with the poison ivy, *Rhus Toxicodendron*. The watery acrid juice, so universal in the Ranunculads (dissipated in many forms in drying), had been extracted from the plants, and evaporating on the surface of the hands, left behind the precipitated active irritating principle."

NOTICES OF BOOKS.

The Trees of Commerce. By W. Stevenson. London: Rider & Co. 8vo, pp. viii, 226. Price 3s. 6d.

Many books are written for the purpose of supplying "a long-felt want," and the author of the book before us tells his readers that his inspiration to produce the *Trees of Commerce* arose from the same cause. In Mr. Stevenson's modest little book, which does not

aim at being scientific, we have a brief and handy "trade manual." The book is by no means perfect, for it is just those trees that he has purposely omitted, such as mahogany, teak, greenheart, &c., that ought to have found a place in a book of this kind, notwithstanding that he says the handling of these and fancy woods in general constitute special trades, and lie outside his province. Teak and greenheart cannot possibly be coupled with fancy woods of any kind, and we can see no reason for the exclusion or for the omission of chestnut and hornbeam.

In these days, when continental languages are so generally used, the introduction of French and German names is almost essential, but we do not see the use of devoting a couple of pages to the etymology of any particular name; these are details not likely to be of much service to the readers of a technical series of handbooks, more especially when, as in the case of the ash, on p. 23, the same information is almost repeated in consecutive paragraphs. The author is scarcely correct, when comparing the "secretionary matters" of ash and oak as attractive and repulsive to insects, he describes the one as "being sweet, and the other bitter." The sweetness of the ash is of course due to the presence of manna, which is so largely formed in the wood of the manna ash, and in smaller proportion in that of the common ash; but in the oak the prevailing principle is tannin, which is astringent rather than bitter.

Under the head of Beech (p. 46) the author says, "One species is common to the western parts of Van Diemen's Land, where it is called the myrtle-tree by the colonists, the wood of which upon reaching this country is, we presume, called honeysuckle, from the transverse septa resembling the flower of this plant." On p. 51 it is further said, "The most important beech tree of the southern hemisphere is the *F. betuloides*, the birch-like or evergreen beech, found in Tierra del Fuego, where it forms vast forests. . . . This beech is also a native of Van Diemen's Land, where it is called the 'myrtle tree' by the colonists. It generally grows in the western part of the island." The Tasmanian myrtle is the wood of *Fagus Cunninghamii*, while the honeysuckle of the same colony is *Banksia marginata*. The two woods are very dissimilar, the *Fagus* producing large burrs, which, upon being cut through, show numerous bold knots, producing a very fine figure; the so-called honeysuckle, on the contrary, owes its beauty to the very large development of the medullary plates, which, upon being cut through, show a silvery grain, somewhat like oak, but, being of a deep red colour, is much richer. The burrs of the myrtle also are of a rich reddish brown colour.

There is so much good and useful matter in the book that it is a pity that such blemishes should occur. Mr. Stevenson has given a great deal of information as to the uses of the woods. The instructions also as to the best means of seasoning for each wood is a valuable feature, and might with advantage be extended. We may also urge that when another edition is asked for, an index will be supplied.

J. R. J.

Supplementum Prodromi Floræ Hispanicæ; sive enumeratio et descriptio omnium plantarum inde ab anno 1862 *usque ad annum* 1893 *in Hispania detectarum quæ innotuerunt auctori, adjectis locis novis specierum jam notarum auctore* MAURITIO WILLKOMM. Stuttgartiæ: E. Koch. 1893. 8vo, pp. ix. 370.

THE scope of this excellent supplement to one of our standard European floras is sufficiently explained by its title, and we congratulate the venerable Professor upon this bringing up to date of the Flora (or 'Prodromus,' as it is modestly styled), which, in union with Prof. Lange, he began in his fortieth year, and concluded in 1880. The progress of knowledge, even in the less known European countries, continually renders such supplements necessary: while the workers upon floras of more remote regions have to lament their incompleteness, not only in that a large portion of them has never been published, but because what has been published is already out of date. The regrettable delay of the *Flora Capensis* and of the *Flora of Tropical Africa* must result, among other disadvantages, in an utter disproportion between the earlier and later volumes of these works, supposing that they ever reach their termination. We were glad to be able to announce the resumption of the latter work, after an interval of seventeen years, and we hope it will not be long before the Cape Flora, which has lain dormant for nearly twice that period, is again set on foot. Lord Salisbury acted wisely in pointing out, three years since, the serious hindrance to scientific progress caused by these delays, and it is to be hoped that the *Conspectus Floræ Africæ* (announced on p. 126) will do something to atone for them. But the discrepancies between the earlier and later instalments of the two books mentioned can at most be but partially remedied by the publication of a supplement brought up to date.

Only those who have worked at the Spanish Flora can rightly estimate the utility of Prof. Willkomm's Supplement; but its scientific value is at once apparent to any systematic botanist. In an excellent preface, the author pays a graceful tribute to Spanish observers who have passed away, and enumerates those to whose researches the present work is mainly due—among them "Lacaita, botanicus anglicus, qui anno 1883 partem regni valentini australiorum visitavit." The additions of 1893 are not included, or we should have found an acknowledgment of another English botanist, Mr. A. E. Lomax, who described a new *Cerastium* in this Journal for 1893 (p. 331). The bibliography is carefully done, and nomenclature is duly attended to, but there is none of that morbid fondness for name-changing which disfigures so many American local floras and some nearer home. Under "*Herniaria ciliata* Bab. (1893)," Prof. Willkomm notes: "Nomen mutandum lege prioritatis in *H. maritima* Lk. in Schrad. Journ. i. p. 57 (1800)": but a reference to Schrader does not supply the name cited, which Mr. Jackson attributes to Link on the authority of Nyman's *Conspectus*; Babington's name dates from 1837, when he published the species in *Trans. Linn. Soc.* xvii. 453.

ARTICLES IN JOURNALS.

Annals of Scottish Nat. Hist. (April). — Biographies of George Gordon and John Roy.—J. Roy & J. P. Bisset, 'Scottish *Desmidieæ*' (1 plate).—T. Scott, 'Food of *Utricularia vulgaris*.'

Annals of Botany (March). — D. H. Campbell, 'Development of *Marattia Douglasii*' (2 plates). — H. H. Dixon, 'Fertilization of *Pinus sylvestris*' (3 plates). — J. B. Farmer, '*Pallavicinia decipiens*' (2 plates). — G. J. Peirce, 'Physiology of *Cuscuta*' (1 plate). — G. Massee, *Cordyceps Henleyæ*, sp. n. — W. Watson, 'Absorption of Water by dead roots.'

Bot. Centralblatt. (Nos. 12, 13). — A. Herbst, 'Zur Kenntniss der Markstrahlen dicotyler Kraüter und Standen.' — (No. 12). O. v. Darbishire, 'Zur Anatomie und Entwickelungsgeschichte von *Phyllophora*.'—(Nos. 14–17). B. Schmid, 'Ueber die Lage des Phanerogamen-Embryo.'—(No. 15). M. Britzelmayr, 'Die Hymenomyceten in Steerbeck's *Theatrum fungorum*.'

Bot. Gazette (Mar. 16). — E. J. Durand, 'Rare Myxomycetes of New York, with notes on germination of *Enteridium Rozeanum*' (2 plates).—B. M. Davis, 'Life history of a blue-green motile cell' (1 plate). — C. Robertson, 'Flowers and Insects.' — K. E. Green, 'An auxanometer for registration of growths of stems in thickness' (2 plates). — A. I. Malford, 'Notes on Rocky Mountain Flora.'—(Ap. 14). G. F. Atkinson, 'Artificial cultures of *Isaria farinosa*' (3 plates).—W. F. Ganong, 'Absorption of water by green parts of plants.'—W. Deane, 'The Ware collection of Blaschka glass models of flowers at Harvard.'—F. C. Newcombe, 'Influence of mechanical resistance on development and life period of cells.' — T. Meehan, 'Compass Plants.' — J. W. Harshberger, 'An additional poison plant' (*Ranunculus acris:* see p. 155).

Bot. Notiser (häft. 2). — H. W. Arnell, 'Moss-studier.' — F. Crépin, 'Sur la distribution des *Rosa* en Scandinavie.' — A. Y. Grevillius, 'Några egendomliga löfträdsformer från Norrland.'— T. Fredrikson, 'Några biologiska företeelser vid blomningen hos *Geranium viscidulum*.'—R. Sernander, 'Om våra röda näckroser.'— H. G. Simmons, 'Några botaniska iaktagelser från östra Schleswig-Holstein.'

Bot. Zeitung (Ap. 16). — F. Buchenau, 'Die Verbreitung von *Oryza clandestina*.'

Bull. Soc. Bot. France (xli: pt. 1). — (March). X. Gillot, 'Formes à fleurs rouges du genre *Galium*.' — L. Mangin, 'Constitution du mucilage de la graine de Lin.' — Ch. Flahault & P. Combres, 'Sur la flore de la Camargue et des alluvions du Rhone' (3 plates).—G. Bonnier, 'L'*Ononis Natrix* sur un sol non calcaire.' — P. Van Tieghem, 'Sur la structure et les affinités des prétendus genres *Nallogia* et *Triarthron*.' — L. Gneau de Lamarlière, 'Excursions bryologiques.' — E. Bescherelle, 'Flore bryologique du Tonkin.'—W. Russell, 'Fasciation.'—A. Lemaire, 'Deux nouveaux colorants applicables à l'étude des méristèmes.'

Bull. Torrey Bot. Club (Mar. 24). — A. M. Vail, 'The genus *Psoralea* in America.'—T. C. Porter, 'Certain plants of our Eastern Flora.'— A. A. Tyler, 'Pubescence of styles and filaments of *Lonicera*' (2 plates). — G. F. Atkinson, 'Germination of spores of *Cerebella Paspali*' (1 plate). — B. D. Halsted, 'Shrinkage of Leaves in Drying' (1 plate). — J. K. Small, 'Morphological notes on *Brunnichia*.'

Erythea (April 1).—E. L. Greene, 'Observations on *Compositæ*.' — Id., 'Historical Notes on Californian Trees.' — A. Davidson, 'Californian Field Notes.'

Gardeners' Chronicle (Mar. 31).—"*Coelogyne Mossiæ* Rolfe ined" (fig. 49: no description).—(Ap. 7, 14). W. B. Hemsley, 'Captain Dampier as a botanist' (Ap. 14). W. G. Smith, 'Disease of *Scilla*' (fig. 56).

Journal de Botanique (Mar. 1).—F. Hy, 'Les Isoetes amphibies de la France centrale.' — (Mar. 16; Ap. 1, 16). E. Bonnet, 'Quelques plantes de Tunisie.'—(Mar. 16; Ap. 1). C. Sauvageau, 'Notes biologiques sur les *Potamogeton*.' —(Mar. 16; Ap. 16). —. Gasilien, 'Lichens des environs de Saint-Omer.' — (Ap. 1). M. Gomont, *Actinococcus*. — (Ap. 1, 16). G. Poirault, 'Les Urédinées et leurs plantes nourricières.'—(Ap. 16). H. Christ, 'Les fougères du Tonkin français.'—N. Patouillard, 'Les Terfèz de la Tunisie.'

La Notarisia (April). — P. Pero, 'I laghi alpini Valtellinesi.'— R. Francé, 'Le Genre *Phythelios*' (1 plate). — E. de Wildeman, '*Treutepohlia Pittieri*.'

Nuovo Giorn. Bot. Italiano (Ap. 1). — S. Sommier, Species of *Centaurea* (1 plate).—A. Baldacci, 'Contributo alla conoscenza della Flora Dalmata,' &c.—Id., 'Monografia della sezione *Aizopsis* del genere *Draba*.'—A. Preda, 'Sopra alcuni frutti di *Pyrus Malus* var. *Appina*.'

Oesterr. Bot. Zeitschrift. (April). — F. Matouschek, 'Die Adventivknospen an den Wedln von *Cystopteris bulbifera*' (2 plates).— J. Bornmüller, 'Nachtrag zu Florula insulæ Thrasos.' — F. Sauter, 'Hepaticæ aus Tirol.' — R. v. Wettstein, 'Untersuchungen über Pflanzen der österreichisch-ungarischen Monarchie.' — A. Degen, 'Ueber einige orientalische Pflanzenarten.'—F. Arnold, 'Lichenologische Fragmente.'—J. Freyn, 'Plantæ novæ Orientales.'

Trans. Linn. Soc. (iii., pt. 10: Feb.). — M. Benson, 'Contributions to Embryology of *Amentiferæ*' (6 plates).

BOOK-NOTES, NEWS, &c.

THE *Annals of Scottish Natural History* for April contains a biography and portrait of Dr. JOHN ROY, whose death we briefly announced on p. 64. Dr. Roy was born at Ardoch, in the parish of Fowlis Webster, in Perthshire, on Feb. 24, 1826, and devoted his

life to reading, retiring from public work in 1893. His botanical work lay chiefly among the freshwater Algæ, especially the *Desmidieæ*, upon which group he was a recognised authority. He was engaged with the Rev. John Ferguson in preparing a flora of the north-east of Scotland, his share of which was fortunately completed some time before his death. In 1889 the Senate of the University of Aberdeen conferred on him the honorary degree of LL.D., in recognition of his scientific merits. Dr. Roy died somewhat suddenly at Aberdeen on the 18th of December last. He contributed to this Journal in 1886 some "Notes on Japanese Desmids," and in 1890 a paper on the freshwater Algæ of Enbridge Lake, Hampshire—the latter is omitted from the bibliography appended to Prof. Trail's notice.

The *Annals* also gives us a biography, with portrait, of the Rev. George Gordon—whose name had so long disappeared from current botanical literature that it found a place in the *Biographical Index*, followed by the words, "fl. 1839." Yet until 1889 Dr. Gordon was at his manse at Birnie, where he had been since 1832, and where his botanical work was done. Since 1839, when he published his *Collectanea for a Flora of Moray*,—a MS. draft of which, dated 1829, is in the Botanical Department of the British Museum,—he appears to have devoted little attention to botany; and his claims to a permanent place among Scottish men of science mainly rest upon his geological researches. In British botany his name will be permanently associated with *Pinguicula alpina*, which he was fortunate enough to add to our flora in 1831. Dr. Gordon was born at Urquhart in 1801, and died at Braebirnie, Elgin, on the 12th of December last.

We are glad to learn that Mr. Charles Baron Clarke, F.R.S., has been nominated by the Council of the Linnean Society for election as President at the Annual Meeting on May 24th.

By the publication of the fourth part of vol. ii. of the fourth series of the *Icones Plantarum*, Sir Joseph Hooker has completed the task which he had set himself in figuring and describing more than two hundred of the Orchids of India. Botanists will recognise their obligations to the veteran botanist for the excellent work thus brought to a conclusion. The species present no attractions to cultivators, and the great majority are here figured for the first time. Sir Joseph Hooker is now busily engaged on the Indian Grasses, by the publication of which the *Flora of British India* will be brought to a satisfactory termination.

Prof. R. A. Philippi continues to publish his "Plantas nuevas Chilenas" in the *Anales de la Universidad de Chile*, the last instalments of which (1893 and 1894) have just reached us. It is much to be regretted that the author does not see his way to issue fasciculi of the plants published, which are, if we mistake not, entirely unknown in European herbaria. The large number of novelties described—in many cases without any indication of their affinity—render some means of access to types extremely desirable.

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BIOGRAPHICAL INDEX

OF

BRITISH AND IRISH BOTANISTS

BY

JAMES BRITTEN, F.L.S., & G. S. BOULGER, F.L.S.

THIS INDEX, which was first published in the 'Journal of Botany,' has elicited general interest. It originated in the supposition that the want of such a reference-list, often felt by the authors, might also be shared by others; and the numerous expressions of interest and approval have fully justified the belief. Numerous additions to the information given in the Journal have been made, and some corrections. The list of names has also been considerably extended.

"The utility and general accuracy of this compilation were rendered evident in the course of its publication in the *Journal of Botany*, and the favourable impression then received is amply confirmed now that the Index appears revised and completed up to date."—*Athenæum*, Dec. 30, 1893.

"The details given by the authors are very concise, but, considering that they comprise reference to other sources of information, they are adequate. The acquirements of the authors, and the unrivalled facilities at their disposition in the Museum, offer the best guarantees that their work has been well done. Those interested in the history of horticulture, as well as in that of botany, will find the work indispensable."—*Gardeners' Chronicle*, Sept. 9, 1893.

"The authors have done their work well, and made a valuable contribution to botanical literature."—*Natural Science*, Oct. 1893.

"All persons interested in the history of botany and of the botanists of these islands, but more especially those actively engaged in botanical work involving historical research, will welcome a reprint of the 'Biographical Index,' which ran through four volumes of this Journal, beginning in 1888. . . . And this little book is, after all, the foundation, and a good substantial one, too, of the history of British and Irish botanists. which may some day develop into as complete and exhaustive a work as Colmeiro's admirable *La Botánica y los Botánicos de la Peninsula Hispano-Lusitana*. No other nation, I believe, possesses such a work as the latter, and no second nation, so far as I am aware, just such a work as the former."—W. Botting Hemsley in *Journ. Bot.*, Sept. 1893.

"This book has been compiled to satisfy a felt want among botanists. The names, dates, chief facts concerning, and published works of, botanists have been carefully put together."—*The Bookman*, Aug. 1893.

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BRITISH AND FOREIGN.

EDITED BY

JAMES BRITTEN, F.L.S.,

SENIOR ASSISTANT, DEPARTMENT OF BOTANY, BRITISH MUSEUM (NATURAL HISTORY), SOUTH KENSINGTON.

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He will be greatly obliged to the Secretaries of Local Natural History Societies if they will forward him copies of their Transactions, so that any paper of botanical interest may be recorded in this Journal.

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Odontostelma Welwitschii *Rendle*.

TWO NEW TROPICAL AFRICAN ASCLEPIADEÆ.

By A. B. Rendle, M.A., F.L.S.

(Plate 344.)

Odontostelma, gen. nov. Calyx 5-partitus, intus 5-glandulosus, segmentis lanceolatis acuminatis. Corolla campanulata, 5-partita, lobis sub-spathulatis contortis dextrorsum obtegentibus. Coronæ squamæ 5, parvæ, basi connatæ, corollæ et tubo staminео adnatæ, carnosæ, planæ, erectæ, apice rotundatæ, dorso dentibus binis inæqualibus lateralibus vel linea transversa instructæ. Stamina basi corollæ affixa, filamentis in tubum brevem connatis; antheræ membrana hyalina ovata incurvata terminatæ. Pollinia in quoque loculo solitaria, pyriformi-oblonga, compressa, pendula; caudiculæ breves inappendiculatæ. Stigma vertice crassum peltatum, 5-crenatum cum fovea centrali. Folliculi . . .

Caulis brevis, e caudice tuberiformi suberectus, tenuis. Folia opposita linearia. Cymæ umbelliformes, terminales et in una axilla cujusque foliorum paris pedunculatæ. Flores mediocres viridescentes.

A new genus of the tribe *Cynancheæ*, with the habit of the narrow-leaved *Xysmalobia*, *X. involucrata* Dcne., and *X. Holubii* Elliot, but separated from *Xysmalobium* by the markedly connate corona-scales, which at the base, where joined to the corolla-tube, form a complete ring; the corolla moreover shows a strongly imbricate æstivation.

O. Welwitschii, sp. unica. Herba semipedalis, basi persistens cum tubere fusiformi pollicari; caule suberecto simplici vel parum ramoso, flexuoso, glabro, superne vix scabridulo; foliis oppositis, linearibus, glabris, cymis multo longioribus, apice cuspidatis, margine revolutis; cymis sæpe 6-floris, pedunculis subscabridulis, pedicellis brevibus; floribus generis.

Hab. Huilla; Angola, *Welwitsch*, No. 4172. Hb. Mus. Brit. In pascuis parce dumetosis pr. Lopollo. Dec. et Jan. 1860.

A small herb with a thin flexuous green stem, $\frac{1}{2}$ ft. long from a short persistent woody base, bearing a spindle-shaped tuber about 1 in. long. In the lower part of the stem the leaves are reduced to scales, but become longer as we ascend, and narrow linear, upwardly spreading and glabrous, reaching $2\frac{1}{2}$–3 in. in length, with a cuspidate apex and revolute margins. The umbelliform cymes are terminal and lateral on peduncles $\frac{1}{2}$–$\frac{3}{4}$ in. long, generally 6-flowered; the flowers borne on thin pedicels, about $\frac{1}{4}$ in. long, are greenish and of medium size, measuring when open about 4 lines across. The calyx-tube is very short ($\frac{1}{2}$ line), and the lanceolate-acuminate segments are $1\frac{1}{6}$ line long. The shortly campanulate corolla is divided to a little above $\frac{1}{2}$ line from its base; the lobes are $3\frac{1}{3}$ lines long by 2 broad above, and spathulate in shape, but relatively broad below; the æstivation is markedly imbricate, the left margin of each lobe being well covered; the coronal scales are connate at the base and adnate to the corolla,

and also united above to the staminal tube, are fleshy, flat and erect, consisting of a larger rounded central lobe and two smaller lateral dorsal teeth, which are sometimes continued, and meet across the back of the scale, forming a ridge. The gynostegium projects about ⅔ line above the scales; the staminal filaments are connate into a short tube, and the connective is produced above the stigma in a short rounded incurving hyaline appendage. The flat stigma is 5-crenate, with a central depression. The solitary pollinia are large, ⅓ line long, pendulous, pyriform-oblong in shape, and compressed; the caudicle is short, narrow, and delicate, without an appendage.

Xysmalobium fritillarioides Rendle, sp. n. Herba sesquipedalis, radice lignosa perennis, caule gracili; foliis oppositis, longe linearibus acutis, herbaceo-viridibus; pedunculis axillaribus quam folia permulto brevioribus; floribus 4–5 umbellatis, viridi-flavescentibus, maximis; sepalis triangulo-subulatis, glabris, dorso sparse scabridulis; corolla rotato-campanulata, lobis obovatis obtusis, margine subito et anguste reflexis, apice recurvato; coronæ squamis tubo stamineo affixis, erectis, crassiusculis, planis, late ovalibus, superne subito angustatis, apice vix cucullatis et gynostegium superantibus, exappendiculatis; antheris membrana hyalina rotundata terminatis; stigmate peltato pentangulari.

Hab. In dumetis (ut videtur rarissima) inter Mumpulla et Humpata. Oct. 1859. *Chlorostelma fritillarioides* Welw., Herb. No. 4179. Herb. Mus. Brit.

Described from an excellent sketch and a single dried flower in the British Museum, together with a few notes by Welwitsch. The stem described by Welwitsch as "gracilis" is fairly thick and robust-looking, being 2 lines in diameter for 1 ft. from the base; the long linear leaves are flexuous, very ascending, and reach 6 in. in length; the peduncles are ⅓–¾ in. long; the pedicels about ¾ in.; the larger flowers, borne in umbels of 4 or 5, are 1½ in. across when expanded, and described in Welwitsch's note as "Fritillariam fere simulantibus"; the corolla-tube is 1½ line long; the lobes ¾ in. long, and ½ in. at their greatest width; the corona-scales are distinct, scarcely fleshy, with a broadly oval almost flat basal portion 2 lines long, suddenly passing into a narrow portion overtopping the gynostegium 1 line long, and just hooded at the extreme tip. The anther connective is expanded into a thin membranous terminal lobe 1 line long. The broadly oblong pollen-masses are ½ line long, while the arms cover an expanse of ⅔ line.

A new species, at once distinguished from the other narrow-leaved *Xysmalobia* by its very large flowers.

Explanation of Plate 344.—Sketch of *Odontoglossum Welwitschii*, nat. size. Fig. 1. Flower. 2. Ditto, showing corona and stamens. 3. Pollinia. 4. Stigma viewed from above. Figs. 1—4 all enlarged.

A NEW SILENE FROM TENERIFFE.

By Frederic N. Williams, F.L.S.

Silene brevistipes, n. sp. [§ *Eusilene*, Sect. I. *Cincinnosilene*, Ser. 2, *Scorpioideæ*]. Caules 35–40 centim., simplices vel parce ramosi, centralis erectus, laterales adscendentes, pilis crispulis vestiti. Folia oblanceolato-spathulata mucronata puberula parce ciliata, basi in petiolum attenuata, apice rotundata, superiora angustiora, omnia uninervia; bracteæ lineari-lanceolatæ acutæ lanuginoso-ciliatæ. Flores breviter pedicellati. Calyx tubulosus inferne haud umbilicatus, fructifer ampliato-ovoideus apice contractus infra capsulam vix attenuatus, nervis viridibus superne venâ unicâ conjunctis pilis longis confervoideis patentibus vestitis inter nervos autem scabrido-pubescentibus, dentibus lanceolatis acuminatis albo-marginatis ciliatis. Petala e calyce exserta bipartita lobis lineari-oblongis. Filamenta glabra. Capsula ovata subsessilis, carpophorum glabrum multies superans. Semina reniformia valde compressa, faciebus concaviuscula, dorso acute canaliculata marginibus plus minus undulatis.

Hab. Near Laguna, Teneriffe (*Rev. R. P. Murray*, June, 1892).

In systematic position this species comes nearest to *S. Maroccana*,* from which it primarily differs in the fructiferous calyx being contracted at the mouth. On the other hand, the secondary characters by which *S. Maroccana* is distinguished from our plant are,—leaves acute, much narrower and more hairy; bracts hispid-ciliate, not lanuginous at the margin; nerves of the calyx villous, but nearly glabrous between the nerves; teeth acute, not acuminate; lobes of the petals much narrower; and carpophore relatively longer, and invested with a few short scattered hairs. Among the species described in Rohrbach's Monograph, it seems most nearly allied to *S. setacea*† and *S. Heldreichii*,‡ but differs in many points from both. Excepting the distinctive character of the seeds, the plant resembles some forms of *S. gallica* in the subsessile capsule and the long confervoid hairs along the nerves of the calyx, and in its general facies.

I have to thank the Rev. R. P. Murray, who is engaged upon a much-needed flora of the Canary Islands, for the specimens from which this plant is described, which were included in a small packet of specimens of *Silene* gathered by him during his stay, and sent for identification. I have failed to match it with specimens of the other species known from the Canary Islands and the adjacent territory of Marocco, nor does it fit in with any description in Rohrbach's Monograph. The specific name is derived from the character of the short carpophore; and though the maze of synonyms and homonyms in an overgrown genus like *Silene* is sufficiently bewildering, I do not think that it has been used before.

---

* Cosson, *Illustr. Fl. Atlant.* fasc. iv. p. 130, t. 83 (1890).

† Viviani, *Fl. Libyc. Spec.* p. 23, t. 12 (1824).

‡ Boissier, *Diagn. Pl. Nov. Or.* Ser. 1. viii. p. 81; *Fl. Orient.* i. p. 589.

ON SOME HIGHLAND PLANTS OBSERVED IN 1893.

By the Rev. E. S. Marshall, M.A., F.L.S., and W. A. Shoolbred, M.R.C.S.

With the exception of one or two species obtained in 1891, the subject-matter of this paper was collected by us during a short visit to the Black Mount district, and the borders of Perthshire and Argyle, between July 26th and August 10th of last year. A good part of the ground explored had previously been worked by ourselves or others, so that we could hardly expect to make very important discoveries; but some hills apparently unknown to botanical literature were visited, namely, the granitic Buchaille Etive Mor, at the head of Glencoe and Glen Etive (which proved to be singularly bare of vegetation), and Ben Creachain and Ben Dothaidh, which form part of the Orchy watershed, draining into Loch Tulla. These two mountains are composed of schistose rock, and have an interesting flora, likely to repay further research. Neither of them was properly worked by us, in one case owing to want of time, and in the other to a dense mist, combined with torrents of rain. A lover of brambles will find abundant scope for work about Dalmally, in the neighbourhood of which two or three forms were found by us which cannot at present be identified.

The places visited are in v.-c. 88 (Mid-Perth) and 98 (Argyle); an asterisk denotes a new vice-comital record. For general help in determining doubtful specimens we are especially indebted to Mr. Arthur Bennett; also to Messrs. Beeby and E. F. Linton. The Rev. W. Moyle Rogers examined our brambles (some of which have been submitted to Dr. Focke); and Mr. F. J. Hanbury has given us the benefit of his remarks on several puzzling hawkweeds.

Thalictrum collinum Wallroth (*T. minus* var. *montanum* Syme). Cliffs of Ben Chaisteil, 98. This was collected by E. S. M., in flower only, two years before; the discovery of good fruit has enabled Mr. Bennett to name it as above. A good deal was seen, but mostly inaccessible. *T. majus* Crantz is associated with it, though sparingly.

Ranunculus petiolaris Marshall. On the shores of Loch Ganich, near Kingshouse, 98, which, though only separated by a mile or so of moorland from the lakes where it was first discovered, drains into the eastern river-system.

Nuphar pumilum Smith. In a very small pool (probably inaccessible in ordinary seasons), near the Crianlarich end of Loch Dochart, 88. Many years ago, the late Mr. James Backhouse found it somewhere about the foot of Ben More, which is not far distant.

Arabis petræa Lam., var. *grandifolia* Druce. Grows on the adjoining hill of Ben-a-Chlee, in Argyle, as well as on Ben Laoigh itself.

Cochlearia officinalis L. We unexpectedly met with this, quite typical and very luxuriant, in rills on Ben Creachain, at 2800 ft.

C. alpina Watson grew close by, retaining all its distinctness; and this fact, taken in combination with the constancy of both under cultivation, or when raised from seed, leads us to believe that they must be treated as "good" species. *C. officinalis* was also obtained on Ben Dothaidh, but less fine and characteristic.

A new *Cochlearia* occurs above 3000 ft. on Ben Dothaidh, 98*; associated with some of the plants which are its companions on Ben Lawers and Am Binnein. It will be described in a future number.

Viola canina L. (pro parte). Shingly shore of Loch Tulla, Inveroran, 98*; and on the shingly bank of the Fillan, between Crianlarich and Tyndrum.

Draba rupestris R. Br. Ben Dothaidh, 98*, at 3000 ft. W. A. S. had previously collected it on Meall Buidhe, an adjoining mountain.

Cerastium arcticum Lange. Ben Dothaidh, 98*; near the last named, and associated with *C. alpinum* L.

Ilex Aquifolium L. A small bush was seen at 1600 or 1700 ft. on Ben Chasteil, 98; its highest recorded elevation in Britain appears to be 1000 ft.

Rubus fissus Lindley. Near Dalmally, 98.

R. dumnoniensis Bab. Dalmally, 98*. New to Scotland?

R. pulcherrimus Neuman. Dalmally, 98*; practically identical with the ordinary form of the south of England, though we did not see septenate leaves.

R. Lindebergii P. J. Mueller. A very strongly-armed bramble found near Dalmally is referred to this by Dr. Focke; it was, however, considered by Mr. Rogers to be *R. carpinifolius* Wh. & N.

R. Selmeri Lindeberg. Very plentiful and characteristic about Dalmally, 98*; determined by Mr. Rogers, and assented to by Dr. Focke. This seems to be the correct name for much that has passed as *villicaulis* in Britain, and the plant is certainly distinct from the *villicaulis* of the northern highlands. Large and strong-growing in this neighbourhood, usually with bright rose-coloured flowers, and bearing considerable superficial resemblance to *R. rhombifolius* when alive. Ordinary Scotch *villicaulis* grows at Inveroran.

R. mucronatus Bloxam. Near Dalmally, 98*.

Drosera anglica × *rotundifolia* (*D. obovata* Mert. & Koch). By Loch Ganich, 98.

Callitriche hamulata Kuetzing. In the tarn on Ben Creachain, at nearly 2300 ft.

Epilobium obscurum × *palustre*. Dalmally, 98*; Crianlarich, 88.

Hieracium eximium Backhouse. A form with remarkably entire leaves occurs on the cliffs of Ben Creachain.

H. gracilentum Backhouse. Corrie-an-Lochan, Blackmount Forest. Owing to the long drought of last summer, although many hundreds of plants were seen, only one or two were found in flower.

H. nigrescens Willd. A small form, placed here by Mr. Hanbury, grew on Ben Creachain with *H. eximium*.

H. senescens Backhouse. Ben Creachain.

H. Schmidtii Tausch. Ben Creachain, Ben Chaisteil, and Buchaille Etive Mor.

H. flocculosum Backhouse. Scarce on Ben Chaisteil, 98*.

H. Dewari Boswell. North side of Buchaille Etive Mor. Ascends to 2300 ft. near Kingshouse.

H. crocatum Fries. By the Orchy, Dalmally; also above a stream on the north side of Buchaille Etive Mor, at 2000 ft.

H. Marshalli Linton. Plants with yellow styles, which Mr. Hanbury considers to be best placed under this species, were found very sparingly in Fionn Glen, near Kingshouse, and on Buchaille Etive Mor, 98.*

H. sinuans F. J. Hanbury. Scarce on Ben Creachain.

H. Backhousei F. J. Hanbury. This was gathered by W. A. S. on Ben Douran, 98*, in 1891, and has recently been identified by Mr. Hanbury.

H. callistophyllum F. J. Hanbury. A new station for this is Corrie-an-Lochan, a side-valley of Corrie Ba, Blackmount Forest. Although so near previously known localities, this has a certain importance, as draining eastwards, and therefore being practically in E. Scotland. A well-marked species.

H. atratum Fries. It is satisfactory to be able at length to record this with confidence as British. Specimens gathered on Ben Creachain, 98*, which reminded us of *H. senescens*, but had fuscous styles, and leaves of a rather different texture, appeared to Mr. Hanbury to correspond very well with Ahlberg's examples of *H. atratum*, and a careful comparison with Fries's types in *Hier. Eur.* at S. Kensington entirely confirmed this view; the plants might indeed, from their appearance, have been collected in the same station. The late Mr. Backhouse seems to have included several forms under the name of *H. chrysanthum* var. *microcephalum*, and probably at least one of these properly belongs to the Friesian species. We also collected a plant or two of *H. atratum* on Ben Dothaidh.

H. cerinthiforme Backhouse. Plentiful on Ben Dothaidh and the north side of Ben Douran; more scarce on Ben Chaisteil.

H. subanfractum Marshall. Lower cliffs of Ben-a-Chlee; streamlet on Buchaille Etive Mor, at 2200 ft.; and ascending to 2800 ft. on Ben Creachain. This remarkably clear-cut and characteristic plant is evidently far from rare in the western mountains, flowering equally well on granitic and on micaceous soils.

H. cæsio-murorum Lindeberg. A specimen from the Allt Giubhas, near Kingshouse, 98*, is so named by Mr. Hanbury.

H. Langwellense F. J. Hanbury. With the last, and recorded on the same authority, 98*.

H. angustatum Lindeberg, var. *elatum* Lindeberg. In or near Corrie Choarach, Meall-na-Saone, Glen Lochay, 88.

H. Pictorum Linton. Apparently new stations for this are:—Ben-a-Chlee, Corrie-an-Lochan, and Buchaille Etive Mor.

H. rivale F. J. Hanbury. Ben Creachain and Corrie Choarach.

H. sparsifolium Lindeberg. By the road to Tyndrum, about two miles from Dalmally; also on the cliffs of Ben Laoigh, at 2100 ft. We had always thought this a peculiarly lowland species;

but it seemed quite as much at home on the mountain as elsewhere, though a little reduced in size. Sparingly by a rill, low down on Buchaille Etive Mor.

H. auratum Fries. An alpine form, differing only by its unusually narrow leaves, is plentiful up to 2000 ft. on a tarn near Kingshouse (the Allt Giubhas). This is almost certainly what Dr. Lindeberg referred to *H. strictum* Fries some years ago; the specimen submitted to him was immature. No *strictum* could be found there on our recent visit, though we kept a sharp look-out for it.

H. reticulatum Lindeberg. In quantity near Inveroran, 98,* some of the plants being very fine. By the Orchy, Dalmally; and by the Fillan, about half-way between Crianlarich and Tyndrum. This seems to us fairly entitled to specific rank, as "species" go in this intricate genus.

Utricularia neglecta Lehm. A small and slender form, with bladders of nearly the normal size, grows in peaty bays of Loch Ganich, 98,* about 970 ft. above the sea; as usual, no flowers were produced. It closely resembles a plant from Loch Eye, E. Ross, found by E. S. M. in 1891. *U. intermedia* Hayne abounds in the wetter parts of Rannoch Muir, near Kingshouse, also occurring in most of the small lakes; this confirms the record for Argyle. *U. minor* L. was flowering freely, close to Achallater Castle, near the head of Loch Tulla.

Mentha arvensis L. A pretty form, with remarkably short calyx-teeth and yellowish herbage, grows on the bank of the Orchy at Dalmally; it is considered by Mr. Bennett to connect the type with var. *Allionii* (Bor.).

Stachys palustris × *sylvatica* (*S. ambigua* Sm.). Near Dalmally.

Salix Myrsinites L. The form or variety *S. procumbens* Forbes was found on Ben-a-Chlee, exceedingly well-marked. *S. fragilis* L. we noticed about Dalmally, 98*, but hardly looking like a native; and *S. nigricans* Smith grows on the cliffs of Ben Chaisteil, 98*.

S. Myrsinites × *phylicifolia* (*S. Normani* Anders.). Ben Laoigh, 88.

Juncus lamprocarpus Ehrh. Specimens from Cam Glen, near Kingshouse, Ben Dothaidh, Ben Chaisteil, and Ben Laoigh, which closely resembled *J. alpinus* in appearance when fresh (the latter grows at 2500 ft. in the Argyle corner of Ben Laoigh, 98*), but lost this look when dried, were sent to Prof. Buchenau, of Bremen, who has named them "*forma paucicapitata*"; adding that they are very near var. *pauciflorus* Sonder, to which Mr. Bennett was disposed to refer them. Probably the "*J. nigritellus*" of English authors is made up partly of this form and partly of *J. alpinus*.

J. biglumis L. Ben Dothaidh, at 3000 ft. or thereabouts.

Sparganium ramosum Curtis, var. *microcarpum* Neuman. Swamp at Dalmally, in great plenty, as well as at Crianlarich; confirmed by Mr. Beeby. This is clearly no mere *state*, but a true *variety*. We did not see the type at all, and in many cases the fruit appeared to be quite ripe.

Eriophorum latifolium Hoppe. Bog on Rannoch Muir, not far from Loch Ganich, 98*. Near this loch *Betula nana* L. occurs in great plenty; it does not seem, as a rule, to flower at all freely in Scotland.

Carex vaginata Tausch. Ben Dothaidh.

C. flava × *fulva* (*C. xanthocarpa* Degl.). By rivulets descending from Buchaille Etive Mor, Ben Chaisteil, and Ben-a-Chlee; in all three cases associated with the parents.

C. pulla Good. Ben Dothaidh, in quantity.

Poa alpina L. Ben Dothaidh. It is curious to observe how local this grass is, considering that it is usually reckoned as one of our commoner alpine plants. So far as we have noticed, it usually avoids a granite soil.

P. glauca Sm. Abundant on Ben Dothaidh and the north side of Ben Douran. Confirms the record for 98.

P. Balfouri Parnell. Ben Dothaidh (perhaps var. *montana* Parnell) and Ben Creachain. This section of *Poa* apparently requires further investigation.

P. nemoralis L., var. *glaucantha* Reichb. Cliffs of Ben Laoigh, locally abundant.—Var. *divaricata* Syme. A form not far removed from the last, equally glaucous, but with more patent inflorescence, is placed here by Mr. Bennett; it was growing on rocks by the stream in Cam Glen, near Kingshouse, at about 2000 ft.

Glyceria plicata Fries. Dalmally, 98*; also *G. pedicellata* Towns. (*G. fluitans* × *plicata?*).

Hymenophyllum unilaterale Bory. Local on the cliffs of Ben Laoigh, at 2000 ft.

Woodsia hyperborea R. Brown. Ben Dothaidh, 98*.

Cystopteris montana Bernh. Wet rocks near the top of Ben Dothaidh.

Equisetum variegatum Schleicher. In rills on Ben Laoigh. This is not likely to have escaped the notice of previous visitors, but we are unaware of its having been recorded.

NOTES ON CONVOLVULACEÆ, CHIEFLY AFRICAN

By James Britten, F.L.S.

(Continued from p. 86.)

Ipomoea denticulata Chois.—To this must be referred *I. leucantha* Baker, Fl. Maurit. 208, non Jacq., which Dr. Hallier places doubtfully under *I. triloba*. We have specimens from Madagascar (Tamatave, Hilsenberg & Bojer), distributed as "*Ipomoea littoralis* Hils. & Boj."; St. Marie (Boivin, 1849, No. 1805); as well as the Rodriguez plant named *I. leucantha* by Mr. Baker.

Dr. Hallier refers doubtfully to this species *I. carnea* Forst. f. (Prodr. 15)—a plant which has already caused trouble. Seemann (Fl. Vit. 170) says truly that "there are no authentic specimens, figures, or descriptions" of it in Herb. Brit. Mus., and adds that "Forster's brief diagnosis is insufficient for determination": Bentham (Fl. Austral. iv. 422) refers Forster's plant to *I. denticulata*, "on the authority of a Society Island specimen, evidently the one described by Forster, determined by Choisy, in the Banksian

herbarium." I have identified this specimen, but am not so sure that it is "the one described by Forster." It must be remembered that Forster did not claim his *I. carnea* as a new species; his diagnosis is that of *I. carnea* Jacq. (with which he incorrectly identified it) cited from Murray's *Systema Vegetabilium*, ed. xiv. His new species have "F." appended to the diagnosis. Hillebrand (Fl. Haw. Isl. 316) cites "*I. Forsteri* Gray, Bot. U.S.E. Exp. ined." as a name for this plant, and retains it as a distinct species, although he says it is "probably not distinct from *I. denticulata*."

I. gracilis Br. is, as Bentham (*l. c.*) points out, so different in its aspect that it seems to me better to follow him in keeping it distinct, although, as he says, "it is difficult to assign any positive limits between the two." *I. littoralis* Bl. according to Bentham (*l. c.*) "is evidently a very different plant, probably closely allied to, if not identical with, *I. reniformis*." Mr. C. B. Clarke (Fl. Brit. Ind. iv. 208) also maintains the distinctness of *I. littoralis* Bl., though both authors agree in placing the plant so called by Thwaites (Enum. 211) as a synonym of *I. denticulata*.

Ipomoea Clappertoni Br. in Denh. & Clapperton, Travels, 240 (1826).—I do not find this taken up by Hallier. It is maintained by Choisy (who erroneously refers to it *I. incurva* Don), but Brown's type-specimens show that it is, as he suspected might be the case, *I. aquatica* Forsk. The locality should read, according to Oudney's note on our specimens, "Matuma," not "Tintuma," as printed in the *Travels*. Besides some of those cited by Hallier, we have African specimens of *I. aquatica* from Angola, *Welwitsch* 6171! 6187! and Congo, Christian Smith! Schimper's 1449 (Zana Sees) is a remarkable plant, with inflated stems about half-an-inch thick: this he named in MS. *Convolvulus Nymphæa*, and added a note, of which the following is a translation:—"Roots on the soil, the upper part floating on the surface of the water, like a *Nymphaea*: the stem is hollow, and sends small swimming roots into the water."

Ipomoea stolonifera J. F. Gmel. Syst. 345 (1796).—On the principles of the *Index Kewensis*, this is the name to be maintained for *I. carnosa* Br. Prod. 485 (1810), to which Mr. Jackson reduces it as a synonym. Dr. Hallier, following Boissier (Fl. Or. iv. 112) prefers to call the plant *I. littoralis*, as it was the *Convolvulus littoralis* of Linnæus; but if, as seems probable (see above), *I. littoralis* of Blume is to be maintained, a further readjustment of names will become necessary. With this must be placed *I. humilis* G. Don (Gen. Syst. iv. 267), of which we have the type in Herb. Mus. Brit.: and *I. incurva* G. Don (*l. c.* 266), both referred by Jackson to *I. Clappertoni*. We have other African specimens from Sierra Leone, *Smeathman*! Cape Coast, *Brass*! Angola, *Welwitsch* 6249! 6250! 6251! (a fine series, showing great variation in leaf-form); Marocco, *Broussonet*! *I. longifolia* Benth. *Pl. Hartw.* 16, which Jackson refers to this species, is an entirely different plant.

Ipomoea calycina.—Mr. C. B. Clarke (Fl. Br. Ind. iv. 201) gives this name to *Aniseia calycina* Chois., and Dr. Hallier retains it, as being the oldest specific name; but *calycina* had been applied by Meissner (Fl. Bras. vii. 260 (1869)) to a Brasilian species. The

plant was distributed as *I. cardiosepala* Hochst. in Herb. un. itin. 1841, nos. 207, 384, and published by Choisy (DC. Prod. ix. 129), and this—its first name under *Ipomoea*—should in my judgment stand, leaving *I. calycina* for Meissner's plant. But if, following Dr. Hallier, *calycina* Clarke is to be retained, the Brazilian plant will require a new name, and may be called I. MEISSNERI.

The retention of *cardiosepala* (Hochst.) will, however, necessitate another change, for Meissner has described a Brazilian plant (*l. c.* 265) under that name: this may be called I. CORDATOSEPALA. "*I. cariosepala* Klotz. in Nub. Pl.," given by Mr. Clarke (Fl. Br. Ind. iv. 201), is a composite misprint for "*I. cardiosepala* Hochst. in Kotsch. Iter nubicum."

Mr. Hemsley, in the 'Index Fl. Sinensis' (Journ. Linn. Soc. xxvi. 160), is of my opinion with regard to the retention of *calycina* for the Brazilian plant, but, for some reason which I cannot fathom, gives Meissner's *cardiosepala* precedence over Hochstetter's, and proposes a new name for the latter—*I. Hardwickii*. The synonymy of the plants is as follows:—

I. CARDIOSEPALA Hochst. Un. it. 1841, nos. 207, 384; Choisy in DC. Prod. ix. 129 (1845).
I. calycina Benth. ex C. B. Clarke in Fl. Brit. Ind. iv. 201 (1883), non Meissn.
I. Hardwickii Hemsl. in Journ. Linn. Soc. xxvi. 160 (1890).

I. CORDATOSEPALA.
I. cardiosepala Meissn. in Fl. Bras. vii. 265, non Hochst.

Dr. Hallier would, I presume, maintain Meissner's *cardiosepala* and reduce his *calycina*. Into the labyrinth to which "once a synonym always a synonym" would lead, I have no desire to wander.

IPOMOEA AURICULATA Hallier.—Dr. Hallier sets aside Choisy's name *I. Cordofana* in favour of the above, because it was distributed under the name of "*Batatas auriculata* Hochst." No description was appended to this, and it seems to me an arbitrary proceeding to reject a name, duly published with complete description in its right genus, in favour of a *nomen nudum* given to a plant in a genus which is not retained.

IPOMOEA SETIFERA Poir.—Dr. Hallier queries Sierra Leone for this species: we have a specimen from that locality from Afzelius.

IPOMOEA ZAMBESIACA mihi (Journ. Bot. March, 1894, 85), non Baker (Bull. Miscell. Inform. Feb. 1894, 70).—I regret that in proposing this name for *I. acuminata* Baker, non Roem. & Schultes, I overlooked its previous employment for another species. I propose to substitute for it I. HALLERIANA, in commemoration of the botanist who has added so much to our knowledge of African *Convolvulaceæ*.

IPOMOEA SAGITTATA Desf.—*Convolvulus Wheleri* Vahl. Symb. ii. 36, is correctly referred by Choisy (DC. Prod. ix. 372) to this species, but, as he does not seem to have seen the type, it may be well to place the matter beyond dispute. Plukenet (Phytographia, lxxxv. fig. 3) calls it *Convolvulus sagittariæfoliis, flore purpureo*

Wheleri, and adds, "ab inventore habui." This figure is based on a specimen in Herb. Sloane, xci. 57, which is labelled by Plukenet, "Convolvulus folio sagittariæ D. Wheler flore amplo purp. in Itinerario suo." This name will be found among the "plants observ'd by Sir George Wheeler in his voyage to Greece and Asia Minor" (Ray, Coll. Travels, ii. 31), where it is recorded from "the Island of Zant." Zante is not cited as a locality for the plant by Boissier (Fl. Orient. iv. 113), nor is it mentioned in Nyman's *Conspectus*, 504, where the European distribution is given as "Valenc. Sicil."

IPOMOEA SINUATA Ort.—*Convolvulus palmatis* Mill. Dict. ed. viii. No. 8, is usually identified with *Ipomoea quinquefolia* L., and the name is corrected to *palmatus*. Miller's specimens, to which his specific definition is attached, show its identity with *I. sinuata* Ort. (Decades, vii. 84). Miller raised the plant from seeds sent him by Houston from Vera Cruz: his specimens are labelled "Vera Cruz, Houston, 1730." One of these plants is glabrous throughout, but the other has the hairy stems, petioles, and peduncles so conspicuous in Jacquin's two figures (Obs. ii. t. 28; Hort. Vindob. t. 159): we have a specimen from Jacquin's garden closely corresponding with the latter figure. Mr. Hemsley (Bot. Biol. Centr. Amer. ii. 394) does not record it from Vera Cruz, and cites as a synonym "*Convolvulus dissectus* Linn.": this name does not, however, appear in Mr. Jackson's *Index*, and should have been attributed to Jacquin, who described the species from plants raised at Vienna from American seed. Those who invest the earliest specific name with special sanctity will have the satisfaction of applyng Jacquin's name (which dates from 1767) to this plant: Dr. Hallier having already, in accordance with this practice, substituted *I. coptica* for the species usually known as *I. dissecta* Willd.

Robert Brown, in Salt's *Voyage to Abyssinia*, Appendix IV., p. lxiv., published the names (only) of three *Convolvulaceæ*, which have not hitherto been identified, the types of which are in the British Museum Herbarium. A comparison of these enables me to identify two of them with well-known species: the third proves to be new.

CONVOLVULUS CIRRHOSUS Br., *l. c.* = *C. arvensis* L.

C. CONGESTUS Br., *l. c.* = *C. glomeratus* Chois.

C. PILOSUS Br., *l. c.* = *Ipomoea Saltiana* (see p. 178).

NEW TROPICAL AFRICAN CONVOLVULACEÆ.

By A. B. RENDLE, M.A., F.L.S.

THE following descriptions are based on specimens contained in the British Museum Herbarium, and not included in Hallier's recent monograph, or in Mr. J. G. Baker's paper in the *Bulletin of Miscellaneous Information*:—

Ipomoea andongense Rendle et Britten, sp. n. Perennis rhizomate tuberosa, caulibus prostratis vel volubilibus, 2–4-pedalibus, ut

petioli pedunculique sparse fulve-pilosis, pilis patulis; foliis superne sæpe ovato-cordatis, inferne oblongis basi cordatis vel ovalibus basi vix subcordatis, apice rotundato vel obtuso, interdum vix acutiusculo, rarissime emarginato, quam petiolus duplo majoribus, supra atrato-viridibus margine et venis sparse pilosis, infra pallidioribus et venis prominulis sparse pilosis; pedunculis axillaribus interdum folia longe excedentibus vel sæpe haud æquantibus; floribus paucis densis; bracteis ovatis, acutis, vel orbiculari-ovatis, ad sepala exteriora approximatis iisque similibus, his autem acutis vel acuminatis quam interiora lineari-subulata multo majoribus, bracteis et sepalis margine fulve ciliatis undique sæpissime glabris; corolla infundibuliformi "ex albido purpurascente," cum fasciis 5 mesopetalis 5-nerviis, calyce subtriplo longiori; staminibus 5 tubo inclusis, filamentis inæqualibus tenuibus tubo supra ejus basin affixis, antheris oblongis; stigmate capitato didymo; disco annulari.

Hab. Caminho, ponte de Luxillo, Pungo Andongo, Dec. 1856, *Welwitsch*, No. 6223; & Sansamanda, Pungo Andongo, No. 6195.

The long and very flexible shoots, 2–4 ft. or more, spring from a woody rhizome; the shoots, according to a note by Welwitsch, are prostrate, "parum volubiles, necdum scandens quum legi," though in the British Museum specimens they look as if they had been trying to climb. The leaves vary somewhat in shape, being ovately cordate in the upper part of the shoot, but more oblong or even oval in the lower parts; in size they vary from $1\frac{1}{4}$ to 3 in. in length, and from $\frac{1}{2}$ to $2\frac{1}{4}$ in. in breadth; the petioles vary from $\frac{1}{2}$ to $1\frac{3}{4}$ in. long. The bracts are broad, and situated a little below the calyx, the outermost sepals of which they resemble; they are from $\frac{1}{3}$ to $\frac{1}{2}$ in. in length, and are about $\frac{1}{3}$ in. broad; like the sepals, they are fringed with stiffish yellow hairs; the outermost sepal is 7 lines long by $4\frac{1}{2}$ broad at the base; the next higher is slightly narrower, ovate-acuminate; the third lanceolate, and the other two linear-subulate. The corolla has a purple-red tube, and a light upper part; it is 19 lines long. The stamens, which are of three lengths, as in *I. porrecta*, are inserted in the tube 4 lines from its base; the filament of one of the two longer ones measured 4 lines, the anthers are $\frac{3}{4}$ line long.

This species is very near the Abyssinian *I. fulvicaulis* Boiss. (*Aniseia fulvicaulis* Hochst.), which, however, besides having the whole plant densely pilose, has a much smaller flower, and more generally oblong leaves.

Ipomoea porrecta Rendle et Britten, sp. n. Suffrutex prostratus ramis elongatis, sarmentosis, e caule lignoso-nodoso perenne nascentibus, ut petioli pedunculique pilis brevibus patulis dilute flavescentibus vestitis; foliis breviter petiolatis, anguste ellipticis vel sæpius plus minus anguste ovato-triangularibus, basi subcordata, apice obtuso mucronulato, margine breviter et flaccide ciliolata, venis et venulis pilosis exceptis undique subglabris; pedunculis axillaribus, cymis pauci-floris, densis, pedicellis brevissimis, bracteis lanceolari-subulatis ut sepala pilosis et ciliolatis sed minoribus; his subæqualibus, exterioribus autem latioribus, ovatis acuminatis, interioribus pæne subulatis; corolla magna,

infundibuliformi, superne extus sparsissime pilosula, violaceo-rosea, fasciis 5 meso-petalis 5-nerviis, tubo basi angusto; staminibus 5 inclusis, inæqualibus, filamentis tubo supra basin affixis, inferne pilosis, antheris oblongis; stylo filiformi stamina excedente, stigmate capitato subdidymo; disco annulari subcarnoso crenato.

Hab. In collinis sylvestribus prope Puri-Cacarambola, Ambaca, ast non frequens. Flor. Octob. *Welwitsch*, 6194.

A prostrate plant, emitting laxly-leaved shoots 2–5 ft. long from a nodose woody rootstock. The shoots, leaf- and flower-stalks, bracts and sepals, are somewhat roughly hairy with short pale yellowish hairs. The petioles are 4–6 lines long; the leaves, which are generally more or less narrowly triangular-ovate, are almost glabrous, except on the veins and veinlets, where the hairs characteristic of the rest of the plant are found; they are $1\frac{1}{2}$–2 in. long, $\frac{1}{2}$–$\frac{3}{4}$ in. at their broadest. The single specimen was just beginning to flower, only one blossom having opened; the flowers are crowded, two, three, or four together, on very short pedicels at the top of axillary peduncles, 1–$2\frac{1}{2}$ in. long. The narrow bracts are 4–5 lines long, and reach above the base of the calyx; the sepals are $\frac{3}{4}$ in., and about equal in length, but the outer ones much broader than the inner. The large corolla is $1\frac{3}{4}$ in. long, the tube being 14 lines, and the spreading limb 8 lines. The stamens are included in the tube, and unequal in length, two being longer and two shorter than the fifth; the filaments are inserted on the tube $3\frac{1}{2}$ lines above its base, and are 5–6 lines long, the lower half bearing long thick multicellular hairs; the oblong anthers are about 1 line long. The filiform style bears a sub-bilobed capitate stigma.

A new species near *I. blepharophylla* Hallier, but distinguished by its larger broader leaves, the several-flowered peduncles, and the larger bracts, which also more resemble the sepals than in Hallier's plant. The latter, moreover, inhabits dry plains and the margins of fields, while *I. porrecta* was found on wooded hills.

Ipomoea adumbrata Rendle et Britten, sp. n. Suffrutex caulibus effusis prostratis (?) ut petioli pedunculique pilis albis hirtulis; foliis parvis breviter petiolatis, oblongis, basi sæpissime truncata vel subhastata, apice rotundato, margine ciliolata venis dorso prominulis et albo-scabridule-pilosis; pedunculis axillaribus, 1–2-floris, folia haud æquantibus; bracteis binis parvis, linearilanceolatis, ut sepala ciliolatis, calycem haud vel vix attingentibus; sepalis exterioribus multo latioribus, ovatis, acuminatis, dorso pilosis, margine albo-ciliatis, interioribus longissime acuminatis; corolla mediocri, calyce subtriplo longiori, extus (nondum evoluta) sparse et breviter pilosa, rosea (?); staminibus 5, 2 longioribus, a basi triangulari pilosa, corollæ tubo affixis; stigmate capitato didymo; disco annulari.

Hab. In apricis breve dumetosis Mumpulla, Huilla. October, 1859. *Welwitsch*, 6128.

A small spreading suberect or prostrate shrub, with a woody rootstock. The shoots, leaf- and flower-stalk are covered with short whitish hairs, which also occur on the lower part of the

somewhat leafy outer sepals, the margins of the bracts and sepals, and the veining on the back of the leaves. The small leaves are ½–¾ in. long, 3–4 lines broad, borne on a petiole 1 line in length. The narrow bracts are about ¼ in. long, the larger outer sepals 4½–6 lines, and 3–4 lines broad. The corollas in the specimen had either withered and fallen, or had not quite opened; the latter were 13–15 lines long, and had apparently been of a rosy colour. The anthers were nearly 2 lines long, the filaments attached by a broad triangular hairy base 1 line from the base of the corolla-tube. The capitate stigma was bilobed by an apical depression; the ovary bilocular and 2-seeded. In the unopened flower the stigma was on a level between the shorter and longer stamens, the anthers of all of which had thoroughly dehisced, while the stigmatic papillæ were covered with pollen. On opening a bud only ½ in. long, all the anthers were found more or less in a state of dehiscence, though the stigma, which was here above them, was clean. These facts, which were also observed in other species, suggest self-fertilisation.

Approaches the South and Tropical African *I. calystegioides* E. Mey., but easily distinguished by its shorter and in proportion broader leaves, and smaller bracts and sepals.

Ipomoea geminiflora Welw. Apont. 590, et Herb. Herba annua a basi ramosa, ramis elongato-virgatis, prostratis aut vix volubilibus sparse puberulis, apice hirsutis rubentibus; foliis glaucis subtus vix puberulis cordato-ovatis vix carnosulis, quam petiola sæpe multo brevioribus, pedunculis brevibus axillaribus geminis, basi bracteolatis, fructificantibus deflexis, bracteis parvis subulatis; sepalis ovatis acuminatis dorso "rubro-glandulosis" et margine hispidis; corolla sulphurea, parum aut vix calycem superante (explicata non visa); filamentis basi tubo affixis, nudis; antheris fere triangularibus; ovario elliptico-conico, basi annulo discoideo alte cincto, loculis 2, et 2-ovulatis, stylo firmo breviusculo, stigmate bicapitellato; capsula tenui glabra, semine breviter tomentoso.

Hab. Rarissime in inundatis exsiccantibus agri Loandæ prope Imbondeiro dos Lobos, "fruct. et pauciss. flor. 8 Junio 1858," et Distr. Golungo, *Welwitsch*, No. 6235.

Welwitsch's notes contain a somewhat full description of this plant, of which we have two sheets in the British Museum. On neither is there any flower, so that in the description of corolla and stamens we have followed the collector's MS. The spreading branches exceed 1½ ft. in length; the leaves vary from 1½ to 2 in. in length, and from ¾ to 2 in. in width at the open broad cordate base; the petioles sometimes equal the blade in length, but may reach a length of 4 in. The short (½–¾ in.) robust axillary peduncles are borne in pairs, and are recurved in the fruit. The calyx in the fruiting stage is hispid and verrucose; the large dull greyish seeds are tomentose, and nearly 2 lines long.

As pointed out by Mr. Britten (p. 86), this plant cannot, as Hallier suggests, be identified with *Ipomœa hispida* R. & S. It resembles this species in the character of its leaves, which are, however, more broadly cordate, but is distinguished by the paired flower-peduncles, never crowded as in *I. hispida*, its rather more

hispid verrucose calyx, and its larger tomentose seed; the capsule is moreover glabrous.

Ipomoea velutipes Welw. MS. Perennis late scandens, caulibus inferioribus (?) cum petiolis lanugine pallide fulvescente floccoso vestitis, floriferis sæpissime subglabris rare sparse tomentosis; foliis cordatis apice acuminatis, integris, longe petiolatis, in caulibus tomentosis majoribus et plus minus pilosis, in floriferis glabris sed venis et petiolis parce pilosis; pedunculis longis robustis rigidis axillaribus folia excedentibus, floribus subcapitatis, sesquipollicaribus; pedicellis brevibus dense pilosis; bracteis lanceolatis longe acuminatis albo-ciliatis, exterioribus multo majoribus involucrantibus; sepalis bracteis consimilibus sed minoribus, et magis pilosis; corolla fugacissima infundibuliformi-campanulata, limbo subintegro 5-plicato, extus rosea intus præcipue a fauce ad tubi fundum usque intense sanguineo-purpurea verniceo-nitente; staminibus 5, 2 longioribus, inclusis, filamentis a fundo tubi oriundis, tubo basi adnatis dein liberis, antheris sesquilineis; stylo filiformi, basi pilis densis circumdato; stigmate globoso capitato; capsula tenui globosa, 4-valvata, sparse albo-pilosa, loculis monospermis, semine bilineo breviter brunneo-hispido.

Hab. Ad dumeta humida juxta oras sylvarum montibus de Queta ast non frequens. Flor. med. Maii, Jul., fruct. Aug. *Welwitsch*, Golungo Alto, Nos. 6226–8, 6142.

A spreading perennial climber, the non-flowering and apparently lower shoots covered with a thick flocculent pale straw-coloured tomentum; the flower-bearing shoots almost glabrous. The exactly cordate leaves have an acuminate apex, and on the tomentose shoots are larger and more or less thickly pubescent on both surfaces, in the floriferous shoots slightly hairy only on the veins and petioles; the larger leaves may be $5\frac{3}{4}$ in. long by $5\frac{1}{2}$ broad, generally between 4 and 5 in. long and $3\frac{1}{2}$ and 4 broad; in the flowering portion they are generally about 3 in. long by 2–$2\frac{1}{2}$ broad; the petioles are about half the length of the blade. The flowers are $1\frac{1}{2}$ in. long, and borne in rather crowded heads at the end of long stiff peduncles. The lanceolate-acuminate bracts are about 8 lines long, the outer larger ones forming a sort of involucre, 1 in. long; the sepals, similar in form, but smaller, are 5 lines long by $1\frac{1}{2}$ broad at the base, and sparsely pilose with a ciliate margin. The corolla, according to Welwitsch's notes, is rosy outside, while inside, especially in the lower half, it is a deep shining blood-purple. Of the five stamens, two are longer than the rest; the filament is adnate at the base for a third or more of its length to the corolla-tube; the long filiform style is densely surrounded at the base by the long (1 line) whitish hairs which cover the top of the ovary. The densely papillose stigma is globose; in an unopened flower it was $\frac{2}{3}$ line long, and already covered with germinating pollen-grains from the dehisced anthers. The capsule is roundish, thin-walled, with scattered white hairs; it dehisces by four valves, each containing a large seed; the seed is 2 lines long, and more or less covered with short stiffish brown hairs.

The tomentose shoots are a striking feature of this new species,

which finds its allies in Hallier's group *Cephalanthæ* of the section *Pharbitis*.

Ipomoea Protea Rendle et Britten, sp. n. Frutex vel suffrutex caulibus rugulosis elongatis prostratis ramosis; foliis breviter petiolatis, florum alabastra excedentibus, oblongis, orbiculari-oblongis, ovato-oblongis vel ovalibus, apice rotundis vel obtusis basi subcordatis, supra scabridulis et sparsissime pilosis, infra puberulis; pedicellis brevissimis, floribus solitariis vel binis vel dichasiis trifloris vel multifloris; pedunculis pedicellisque brevibus verruculosis, bracteis parvis lanceolatis; sepalis glabris, duo exterioribus minoribus, ovatis acutis, dorso verruculosis, interiorum margine pellucido; corolla tabescente vel nondum evoluta infundibuliformi (?) calyce duplo longiori vel supra; staminibus 5, 2 longioribus, basi triangulari pilosa tubo affixis, antheris lineari-oblongis; stigmate didymo; disco annulari.

Hab. Quitage. Pungo Andongo, *Welwitsch*, 6192.

The long spreading shoots reach a length of 5 ft. or more, are well covered with leaves, and have a rugulose surface; the shape of the leaves varies from almost roundish through ovate and oblong to oval, and the size from $1\frac{1}{4}$ to $2\frac{1}{3}$ in. in length, and from $\frac{3}{4}$ to $2\frac{1}{4}$ in. in breadth; the petiole is $\frac{1}{4}$ in. long or less; the leaves are longer than the unopened flowers. The outer sepals are 5–6 lines, the inner 7–9 lines long; they are deep wine-red at the base, inside glabrous and smooth, outside where exposed minutely warted, and more or less deep brownish in colour. Only one withered corolla was present; it had been apparently infundibuliform in shape, and more than 1 in. in length; in the bud it has a pointed curving tip. The stamens are attached by a triangular hairy base 2 lines above the base of the tube; the two longer filaments are 4 lines in length, the anthers $2\frac{1}{2}$ lines.

This plant, or more correctly Welwitsch's No. 6192 in herb. DeCandolle, is tentatively referred by Hallier in Engl. Bot. Jahrb. xviii. 109, to *Convolvulus Canariensis* L.; Hallier states, however, that the specimen bore neither flowers nor fruit. It is a true *Ipomoea* of Hallier's section *Leiocalyx*, and allied to *I. asarifolia* R. & S.

Ipomoea arenicola Rendle et Britten, sp. n. Herba glabra perennis radice tuberoso, caule brevi decumbente carnoso purpureo; foliis petiolatis infimis minoribus lanceolatis vel ellipticis sæpissime acutis, superne majoribus ovali-oblongis acutis, saturate-viridibus quam petiola crassa quadruplo longioribus; floribus in cymo multifloro e caulis basi nascente, vel axillaribus et solitariis vel dichasio simplici; pedunculis folia vix vel haud æquantibus, pedicellis brevibus; bracteis parvis triangulari-subulatis ut sepala verruculosis; sepalis ovatis vel anguste ovatis acuminatis apice voluto falcatis, vineis, reliqua velut in *I. Protea*; corolla magna campanulari-infundibuliformi (?) albido-violacea intus purpurea; staminibus et stigmate velut in *I. Protea*, antheris subsagittatis; disco annulari margine undulato; capsula globosa fulva superne purpureo tincta, seminibus breviter tomentosis.

Hab. In sylvis arenosis, Cazella, Pungo Andongo, Oct. 18th, 1856, *Welwitsch*, No. 6180.

A small irregularly spreading glabrous herb, with rather fleshy shoots 4–10 in. long. The scattered leaves are smaller near the base of the shoot, and lanceolate to elliptic in shape, while above they are much larger and oval-oblong; their size varies from 1¼ to 3½ in. in length, and from less than ½ in. to 1¾ in. in breadth; the thick stalks are about one-fourth the length of the blade. The flowers are sometimes solitary on short axillary peduncles, or borne in a simple axillary dichasium, but the greater number on a many-(to 10) flowered spreading cymose inflorescence springing from the base of the shoot. The sepals closely resemble those of *I. Protea* in character, but are more generally and deeply coloured and somewhat narrower, with an acuminate rolled-up falcate tip; the corolla is apparently between bell- and funnel-shaped, but was only present in a withered or unopened state; it is about 1¾ in. long, with a tube of 1¼ in. long. The stamens, which are of three lengths, closely resemble those of *I. Protea*, and are fixed to the tube about 3 lines from its base. The hairs, as in the last and other species, on and about the triangular base of the stamen are very long, capitate, and glandular, the head being oblong and remarkably large. They may perhaps function as pollen collectors. The thin-walled capsule is globose, glabrous, except for a few scattered hairs on the upper part, 5 lines in length, and light brown tinged above with purple; the seeds are clothed with a very short tomentum.

Nearly allied to *I. Protea*, though different in habit, and in its perfectly glabrous character. Is apparently near *I. Vogelii* Baker (ex descriptione brevi) in *Kew Bulletin*, 1894, p. 71, but the leaves are not broadly ovate, obtuse, and cordate; moreover, the flowers of *I. Vogelii* are described as "omnino *I. asarifoliæ*," whereas in our species the sepals are acuminate, not very blunt, as in *asarifolia*.

Ipomoea humifera Rendle et Britten, sp. n. "Herba ut videtur perennis humifera nec scandens," caule tenuissimo repente hirtulo, ramos longos tenuissimos glabros emittente; foliis ovato-cordatis (interdum angustioribus), acuminatis, membranaceis, rigidulis, margine hirtulo et petiolo brevi patule-piloso exceptis glabris; floribus axillaribus solitariis, pedunculis subrigidis, glabris, folia haud æquantibus; bracteis minimis subulatis; sepalis parvis subæqualibus glabris, ovatis mucronatis, 3 exterioribus dorso verrucosis; corolla speciosa purpurea, late tubuloso-infundibuliformi; staminibus inæqualibus filamentis linearibus a basi latiori longe pilosa tubo affixis, antheris sagittatis; stylo filiformi, stigmate capitato globoso.

Hab. In dumetis sylvestribus de Mata de Pungo, Pungo Andongo; fl. medio April, 1857, *Welwitsch*, No. 6177, et Quitage, Waldchen ober Quibinda, P. Andongo, No. 6178.

Has a very thin creeping stem sending out long wiry branching shoots, which may be over 5 ft. in length, apparently spreading over the ground and twining round low plants, as they are much twisted and bent, while the almost filiform terminal portion has become looped and twined closely round the portion immediately below; according to Welwitsch's note, "humifera nec scandens." The leaves vary in size from about 1 in. long by ½ in. broad on the main stem and shorter branches, to 2–2½ in. long and 1–1¼ in.

broad on the long shoots; in shape they are acuminate and ovate-cordate or narrower, becoming almost lanceolate. The small somewhat coriaceous sepals are only 3 lines long, the shapely corolla 1½ to nearly 2 in. The stamens are unequal, the narrow linear filaments ranging from 4¾ to 7½ lines in length are inserted 2 lines above the base of the tube by a broadened base, on which are long thick jointed hairs, as observed in some other species described above; the filament is apparently adnate to the tube down to the base of the latter, as it can be easily separated without tearing. The sagittate anthers are 1⅓ line long, the filiform style nearly 1 in.

Apparently allied to *I. asclepiadea* Hallier ex descript. in Engl. Jahrb. xviii. p. 142, a species from the Upper Congo region, which, however, differs in having much smaller flowers collected in sub-umbellate lax dichasia, dark sepals cinereo-pilosulose on the exterior, exactly cordate leaves, and a climbing stem.

Ipomoea Saltiana Rendle, sp. n. Volubilis caule tenui plus minus pallide piloso; foliis sparsis, longe petiolatis, triangulari-cordatis acuminatis, atrate viridibus, sparse pilosulis, petiolis tenuibus velut pedicelli pubescentibus, quam folia brevioribus; floribus axillaribus, sæpius solitariis, pedunculis quam petiola longioribus supra bracteas minimas acuto-triangulares crassioribus; sepalis æqualibus ovatis, 3 exterioribus dorso pilosis et breviter mucronatis, 2 interioribus glabris et obtusis; corolla pallida infundibuliformi (?) specimine tabescente; staminum 5 inclusorum 2 quam reliqua multo longioribus, filamentis linearibus a basi latiori longe pilosa supra tubi basin insertis; stigmate capitato semigloboso; disco annulari.

Hab. Abyssinia, *H. Salt*. *Convolvulus pilosus* R. Br. nomen in Salt, Itin. Appendix iv. p. lxiv.

A rather insignificant-looking plant, with a pilose sparsely-leaved apparently climbing stem; the dull green and triangular-cordate leaves are 1½ in. long by 1 in. broad, with a thin petiole of about 1 in. The flowers are solitary, or a second is present on the axillary shoot; the ovate sepals are 2½ lines long; the corolla 1 in.; the latter, which was either unopened or withered in the specimen, is of a deep colour below, becoming suddenly paler above the sepals; the stamens are inserted 1½ lines above the base of the tube, the two longer filaments being 4 lines long, the others 2¼ lines; they bear the long thick hairs on their broadened base; the anthers are 1 line long.

Closely allied to *I. obscura* Ker, but distinguished by its more pilose character, especially in the sepals, its triangular-cordate leaves, and smaller flowers.

Ipomoea Simonsiana Rendle, sp. n. Herba annua caule infra ramoso, ramis longis tenuissimis diffusis volubilibus (?) vix pilosulis; foliis longe petiolatis, cordatis acuminatis, grosse dentatis, undique sparse pilosis et minute scabridulis; floribus axillaribus solitariis, pedunculis rigidis quam flos brevioribus; sepalis subæqualibus spathulatis, apiculatis, 3-nerviis, dorso minute pilosulis; corolla sub-hypocrateriformi pallide rosea (?) calycem triplo excedente, limbo fasciis 5 3-nerviis lineato et sinubus 5 marginalibus; staminibus

5 inclusis, 2 longioribus, filamentis linearibus corollæ tubo supra basin insertis; stylo filiformi, stigmate capitato didymo.

Hab. Lake Nyassa, *Simons*, 1877.

Apparently an annual herb, sending long thin and apparently climbing shoots from near the base; the thin and membranous dull green leaves are palmately veined, the veins passing into the large blunt teeth; they are cordate, with a markedly acuminate apex, and measure from 1 to 2 in. in length and breadth; the narrow petiole is generally shorter than the blade, but varies considerably from less than 1 to more than 2 in. The flower-stalk is rather more than half the length of the flower; the broadly spathulate sepals are 3–3½ lines long, the almost hypocrateriform *Vinca*-like corolla 10 lines; the stamens, which are inserted 1 line above the base of the tube, have linear filaments 4–5 lines long, the anther being ¾ line, and the globose pollen echinulate as in the genus.

A very distinct species, well-characterised by its spathulate calyx and hypocrateriform corolla.

Merremia spongiosa Rendle, sp. n. Planta glabra prostrata caule petiolis pedunculisque anguste alatis; foliis breviter petiolatis lanceolatis acuminatis margine crispa, læte viridibus, subtus spongiosis, pedunculis quam folia brevioribus, cymis 5–10-floris, bracteis membranaceis subulatis; sepalis subæqualibus, subcoriaceis, ovalibus; corolla nondum evoluta, alabastro ovoideo obtuso, dense piloso; polline inermi, ellipsoideo plicato; stigmate capitate bilobo; capsula tenui, seminibus breviter tomentosis.

Hab. Pungo Andongo, *Welwitsch*, 6196 *b*.

The prostrate narrowly winged stem is more than 4 ft. in length; the lanceolate-acuminate leaves are 3–3½ in. long, including the petiole (¼ in.), and 6–7 lines broad, with a somewhat crisped margin and a midrib, and generally two stronger lateral nerves prominent on the under surface, which has a spongy texture when dry. The membranous subulate bracts are 1½–5 lines long; the sepals ¼ in. or a little longer, and brown, with a thinner brittle purplish border; the sagittate anthers measure ½ line; the thin-walled brittle capsule is about ⅓ in. in length.

Allied to *M. umbellata* Hallier (= *Ipomoea umbellata* Mey.), but at once distinguished by its lanceolate-acuminate leaves, the shorter peduncles, and smaller non-umbellate flowers. Hallier's genus *Merremia* has been adopted, though in the opinion of some the use of the unarmed plicate pollen as a separating character may be inadvisable, in which case the plant becomes *Ipomoea spongiosa*.

Ipomoea uliginosa Welw. MS. ad int. No. 6169, from Pungo Andongo, is apparently a closely allied plant with smaller linear-lanceolate leaves, but, as there is no flower in the specimen, the material is insufficient for description. Welwitsch's note reads as follows:—"Flores albidi habitu roseo plumoso-hirsuti. Hab. in uliginosis de Mutollo socialis cum Scleriis. Jan. 1857."

BIBLIOGRAPHICAL NOTES.

V.—The Dating of Periodicals.

Considering the importance which attaches in questions of priority to the dates of the publication of new species, it is surprising how little care is taken, even in some of our most useful periodicals, to place these on record. A few examples—for I do not propose to treat the matter at any length—will make this clear, and will, it is hoped, lead to reform in cases where reform is necessary.

As an instance of the worst kind, I will cite Engler's *Botanische Jahrbücher*. The parts of this are carefully dated *on the cover*, but no date appears in the text; when the volume is bound, the covers are usually destroyed, and it then becomes impossible to ascertain the date of any special page, especially as the title-page bears only the year of publication for the volume. The inconvenience arising is intensified by the facts that a very large number of new species are published in the *Jahrbücher*, and that the intervals at which it is issued are irregular.

Malpighia is another example, in some respects even worse than the foregoing. Although styled "rassegna mensuale," the volume dated 1893 was issued in six parts, of which four contained two fascicles, one one, and one three. The last is dated on its wrapper 1894, yet the volume has 1893 on its cover! There is nowhere any indication of the month in which publication took place, and no means of ascertaining the limits of each "fascicle." It would surely be better to omit from the wrapper the misleading word "mensuale."

The *Botaniska Notiser* and *Botanisches Centralblatt* appear at first sight to be undated, but the date will be found at the end of the last page of each number, and is thus permanently preserved, although it is liable to be overlooked.

The *Bulletin of Miscellaneous Information*, if judged by its wrappers, would prove very misleading: of the twelve numbers for 1893, only three appeared in the months to which they are there accredited. Here, however, the remedy is supplied by the Stationery Office, of which it is an official issue, by figures at the foot of the first page of each number, showing the actual date of printing: thus the number bearing at its head "February and March, 1893," has at the bottom of the same page "5/93," showing that the actual publication took place in May. This, again, is likely to be overlooked, for it is not unreasonable to suppose that monthly journals will at any rate appear some time during the month whose name they bear.

This, however, is by no means always the case with the *Annals of Botany*, which, from a bibliographical point of view, has always been singularly unsatisfactory. The month in which publication is supposed to have taken place is given at the foot of the first page of each part, but this is often very misleading. The number dated "Nov. 1888," for example, did not appear until January, 1889;

yet, owing to the misleading indication, a new plant published therein was cited later as one of the novelties of 1888.

There is no necessity to demonstrate the inconveniences arising from these variously unsatisfactory methods of proceeding: but the adduction of one or two examples of how the required information should be supplied may bring about a remedy. Nothing can be better, for example, than the plan adopted by the *Bulletin of the Torrey Club*, which gives at the head of each number the exact date of issue. This appears not easy to carry out, but Dr. Britton has somehow overcome the difficulty. The *Botanical Gazette* gives this information on the cover, which seems easier: and if on the back of the title-page of each volume the exact date of each number were given, nothing more could be wished. Our own plan of putting the month at the bottom of each sheet is sufficient for most purposes, as the *Journal of Botany* is not wont to be delayed after the first of each month.

For publications appearing at uncertain intervals, the plan adopted in the *Journal of the Linnean Society* is that which should be universally employed. On the back of the title-page of each volume is given the date of each number included in it: thus—

"No. 197, pp. 1–67, published August 22, 1891."

Nothing more is needed to secure complete information as to the date to be assigned to each species published in the part; and it is to be hoped that this simple means of identification will at once be adopted.

The same plan is employed by Sir J. D. Hooker in the *Flora of British India*, and should be followed in every similar work which is issued in parts. It is, indeed, so simple and so obvious that only the inconvenience resulting from its non-adoption would have induced me to bring it forward here.

JAMES BRITTEN.

SAGINA REUTERI Boiss. IN BRITAIN.

By G. CLARIDGE DRUCE, M.A., F.L.S.

SOME specimens of a *Sagina* which had been gathered by Capt. S. H. Stewart in the brickwork of Malvern Station were sent to the Botanical Exchange Club in 1892 as a variety of *Sagina apetala*. It was referred by critical botanists to *S. ciliata*, to *apetala* var. *prostrata*, &c. At first I was inclined to pass the plants over as *S. ciliata*, but on closer examination I could see no mucro on the two sepals, as in true *S. ciliata*, and it recalled a form which I had previously gathered in Northants and Berkshire which had all the sepals blunt, yet adpressed to the calyx. Specimens were sent to Dr. Lange, of Copenhagen, who reported that "the *Sagina* is not *S. ciliata*, nor *S. apetala*, but, if not a new species, must be referred to *S. Reuteri* Boiss." This is figured in Willkomm's *Icones et descriptiones Plantarum Nov. crit. et rar.* vol. i. tab. 73 A: and is described on p. 114 *l. c.* as "Annua, pygmæa, multicaulis, radice tenui perpendiculari.

Caules 1–2 pollicares, erecto-patuli, fere a basi dichotome ramosi, internodiis brevibus. Folia superiora et media internodiis breviora vix lineam longa, infima 2–3‴ longa internodiis longiora, omnia lineari-lanceolata acuminata aristata, basi ciliata. Flores tetrameri minimi solitarii subcymosi breviter pedunculati, pedunculis et floriferis et fructiferis erectis calyce longioribus setaceis. Sepala $\frac{1}{4}$‴ longa ovato-oblonga glabra mutica apice subincurva uninervia margine anguste membranacea, in flore fructifero capsulæ adpressa eaque breviora. Petala nulla. Stamina 4 sepalis breviora, antheris didymis. Capsula quadrivalvis, valvis apice emarginato-truncatis. Semina ignota. Tota plantula læte virens et parce glandulosa-puberula = *S. Reuteri* Boissier in *Diagn. Pl. Orient.* ser. ii. n. l. p. 82. Species e sectione *Saginella* Fenzl, proxima *S. apetalæ* L. et *S. patulæ* Jord. Prior differt foliis longioribus pedunculis elongatis, et sepalis etiam in statu fructifero in crucem expansis. Cf. Reich. *Ic.* f. 4958 (icon bona), *S. patula*, Jord. *Obs.* i. p. 23, t. 3, f. a (icon optima) præter habitum procerum laxum capsula calycem non excedente distincta est. Hab. in Hispania centrali circa Madritum, Reuter!" See also Willkomm and Lange's *Prod. Floræ Hispanicæ*, iii. 602. The plant may be known from *S. apetala* by its sepals not spreading when the capsule is ripe in the form of a cross, from *S. procumbens* by its erect peduncles, and from *S. ciliata* by all the sepals being blunt and shorter than the capsule. The distribution of *S. Reuteri* Boiss. in Europe was up to this record supposed to be confined to the district round Madrid, a variety—*peduncularis*—being found in "Aragonia australi."

The Berkshire and Northamptonshire plant referred to is not identical with *S. Reuteri*, but may be better placed under *S. ciliata*. Mr. Towndrow has not, so far, succeeded in finding the plant in any other locality round Malvern, so that at present we can scarcely class this as a native plant; but it is possible that if critical attention be given to the forms of *Sagina ciliata*, &c., it may be found in other and less suspicious localities.

NEW ZEALAND SOW-THISTLES.

By T. Kirk, F.L.S.

In the *Flora Novæ-Zelandiæ* and the *Handbook of the New Zealand Flora*, Sir Joseph Hooker recognises one species, *Sonchus oleraceus* L., of which he considers *S. asper* Hoffm. to be a variety. Bentham adopts this view in *Flora Australiensis*, iii. 679. Both forms vary greatly in the outline, cutting and texture of the leaves, and may be briefly characterised as under:—

Sonchus oleraceus L. Sp. 116; Forst. Prodr. n. 282.

α. oleraceus. Leaves clasping, almost entire, or toothed, or deeply pinnatifid. Cauline leaves with large sagittate auricles. Achenes glabrous, with 3–5 longitudinal ribs, finely muricate.

β. asper. S. asper Hoffm. Leaves clasping, almost entire, or lobed, or deeply pinnatifid, sharply toothed, sometimes rigid, with

the margins crisped and spinulose. Achenes longitudinally ribbed, glabrous.

Sir Joseph Hooker considers the variety β. to be truly indigenous in New Zealand, as it was collected by Banks and Solander. It is, however, certain that seeds of both forms have been repeatedly introduced, and in all probability intercrossing has frequently occurred, as fruits of the typical form vary greatly in the degree of murication which they exhibit; in many instances it is very faint, while in others it is strongly marked.

The Rev. W. Colenso, F.R.S., considers the typical form to be the *puwha* of the Maoris, who formerly used it for food, but have abandoned it for the introduced European plant, which is less bitter.

There is, however, a striking indigenous form, which I now describe:—

γ. LITTORALIS, n. var. Erect, 1–2 ft. high, sparingly branched, robust; radical leaves rosulate, sessile, ovate, entire or lobulate, obtuse, toothed. Cauline leaves few, acute, with rounded or subacute auricles. Outer involucral bracts acute, inner broadly rounded. Achenes glabrous; ribs spreading.

Hab. On maritime cliffs; from Auckland to Stewart Island, but rarely in great abundance.

The uniformly undivided rosulate leaves, which are somewhat fleshy, the more robust habit, and copious milky juice, are well worthy of notice. The absence of variation is a remarkable feature when the plant is compared with the typical form and var. *asper*. I have never met with it in cultivated land, and, so far as known to me, it is absolutely restricted to maritime habitats.

It seems not unlikely that the plant collected by Banks and Solander may be this var. *littoralis;* the fruits resemble those of var. *asper*, but are rather larger. This point might perhaps be settled by an examination of the specimens in the Banksian Herbarium, although dried Sonchi are usually imperfect, and not easily recognised.* It is worthy of note that Dr. Anderson, who acted as naturalist to Cook's third expedition, mentions the occurrence of "sowthistles" in Queen Charlotte's Sound, so that in all probability the plant collected by him was my var. *littoralis*.

Shortly before leaving New Zealand, my old friend Mr. J. D. Enys visited the Chatham Islands, where he obtained fine leaves of a *Sonchus*, over two feet in length, together with large flowers, which he kindly sent to me, but unfortunately they arrived in such a bad state of decay that I was unable to dissect the flowers. However, on examining the type-collection of Chatham Island plants in the Colonial Museum, I found two specimens, one of which was *S. oleraceus* L., the other on examination proved to be the plant discovered by Mr. Enys. In justice to Mr. Buchanan, who arranged the collection, it must be mentioned that both specimens are mere

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* [The specimens in question are very poor, but leave very little room for doubt that they were correctly referred to *asper*, with which the MS. description also tallies.—ED. JOURN. BOT.]

scraps in very bad condition. Unhappily my efforts to obtain good specimens were not fully rewarded, although a valued correspondent on the islands sent a strong root, which failed to grow. In January, however, the plant flowered in the nursery grounds of Messrs. Adams & Sons, Christchurch, and I am indebted to these gentlemen for kindly sending the flowering receptacle and ripe seeds. Unlike the forms previously mentioned, it is a strongly-marked species, as will be seen from the following description:—

Sonchus grandifolius, sp. n. A succulent herb 2–4 ft. high. Rhizome stout, creeping, fleshy, sometimes 2 in. diam. Radical leaves erect, 1½–2 ft. long, 4–7 in. broad; petiole 6–9 in. long, stout, dilated at base, not clasping; blade oblong or ovate-oblong, pinnate, pinnatifid or deeply lobed; segments 4–6 on each side, coarsely doubly serrate or dentate, almost coriaceous, scabrid above. Lower cauline petioled, upper broadly sessile, not auriculate. Anthodia corymbose, 1–1½ in. diam.; peduncles cottony. Involucral leaves in 3–4 series, broad, subacute, outer with a median line of spinous or rarely subfoliaceous processes. Achenes large, broad, with 1 or 2 stout median longitudinal ribs, and about 4 finer ones; margins broad.

Hab. Chatham Islands.

The ligulate florets appear to be yellow, tinged at the apices with faint salmon-colour or purple. It is a noble addition to the endemic plants of the Chatham Islands.

SHORT NOTES.

RANUNCULUS ACRIS AS AN IRRITANT (p. 155).—The following is an Italian receipt for an ointment made from buttercup blossoms,—which species I could not ascertain,—which I was told was highly efficacious in the cure of cancer. The wording of the receipt is in places rather obscure, but I copy it as I received it:—"Gather the blossoms of buttercups (1 peck). Take the 8th of a lb. of fresh butter from the churn, before either salt or water has been put, and pound it in a *marble* mortar, and *melt* it (not boil it), in an earthen pan over a stove; add the blossoms, and stir for 1 hour, very gently, with a *wooden* ladle. It will sink a good deal; then ladle it out and put on a strong cheese cloth, and under a press, till every drop is squeezed out, then put in dry jar. The proper time to gather the blossoms is in May, not before, nor after, and nothing but the blossoms. When the ointment is put on the stove to melt, the pan must be well greased on the *out*side to prevent it from cracking. The buttercups must be gathered as near as possible to where there is water, as they are much stronger. The ointment must be put on fresh twice a day, for one week. The first symptoms will be a deal of water, and then comes thicker matter. To put the ointment only on the affected part; it will draw everything into one place, and not cause a wound. It will be about a month that the ointment must be kept on. When all the

discharge is passed, it will then heal up alone, and a little cooling ointment must be applied to keep it from cracking." I was told that the ointment caused much pain, and that it seemed to affect the cancerous part to the very roots, drying it up, and eventually it came away from the roots, "like a carrot." The receipt was obtained for me by a relation from some person in Italy. Perhaps some of your readers can give details of its efficacy. — C. H. Sp. Perceval.

Artemisia Stelleriana Bess. (pp. 70, 104).—I can add several localities in the United States, though all in this little State of Rhode Island. Two years ago it was sent me from Newport, R. I., for a name, and last summer I found it in Little Compton, R. I. These two localities are separated by a deep arm of the sea. I believe it also occurs at Narraganset Pier, across another arm of the Bay. In all these places it is always near the shore, and on the sandy dunes. These facts may interest Dr. Areschoug.—W. Whitman Bailey, *Providence, R. I.*

Salix aurita × herbacea in E. Perth.—In July, 1892, I found a queer little willow at about 1400 ft., by the Lochsie, Glen Shee, one parent of which was evidently *S. aurita;* it was without flowers or fruit, and cuttings were sent home with a view to testing it. After some hesitation, Dr. Buchanan White placed it under *S. ambigua* (*aurita* × *repens*) as a curious form, and I could see no better solution, though the *repens* affinities seemed somewhat vague. This year, however, my cuttings have flowered, and both the catkins (♀) and the leaves conclusively prove *S. herbacea* to be the second parent. Mr. F. J. Hanbury at once suggested the true origin, on seeing my dried specimens, a short time after they were collected; but the low elevation made me discard his suggestion for the time being. In habit the plant was nearer to *herbacea*, having slender, tortuous, interlacing branches, and being almost decumbent. Many of the leaves are roundish, and their texture and colour also recall its alpine ancestry. The stream on which it grows is particularly rich in rare hybrids, including *aurita* × *Lapponum*, *Caprea* × *Lapponum*, *phylicifolia* × *repens*, and *Lapponum* × *repens*. The subject of this note is of peculiar interest, as Ben Challum is its only recorded British locality, and it is unknown on the Continent.—Edward S. Marshall.

Dr. Kuntze's variety of Achyrodes aureum.—On page 758 of the *Revisio*, its author describes a grass found by him on the islands of Teneriffe and Palma, as a distinct variety of *Achyrodes aureum* (L.) O. Ktze., under the name *variegatum*. He states that the normal form has a concolorous, pale greenish inflorescence, while in his plants the bases of the glumes and palets are subviolaceous, in a young state or always. Last year I collected specimens of *Achyrodes aureum* in the Santa Clara Valley, California, all of which exhibited more or less purplish colouring at the base of the palets, especially those of the sterile spikelets. This tint, however, appears to be developed with age, being visible throughout the panicles only at their maturity, and totally absent from those which are just emerging from the sheath; while

panicles in intermediate stages of development have the spikelets of the upper portion tinted, and of the lower concolorous. The same thing is noticeable in a specimen collected by Reverchon in Sardinia, in one from Hyères, and one from San Diego Co., California, all of which are preserved in the herbarium of the Californian Academy of Sciences, San Francisco. It appears, therefore, that unless Dr. Kuntze's plant exhibits other characteristics than those mentioned by him, by which it can be distinguished from typical *Achyrodes aureum*, its position as a variety can no longer be maintained.—J. Burtt Davy.

Malvastrum v. Malveopsis.—As stated on p. 38, Presl's genus *Malveopsis* is founded on *Malva anomala* Link & Otto. My only knowledge of *Malva anomala* was derived from a specimen collected between Kochmanns Kloof and Gauritzrivier, and published under that name in Ecklon & Zeyher's *Enum. Pl. Afr. Austr.* p. 36; this is certainly identical with *Sphæralcea elegans* Don. Through the kindness of the authorities at Berlin, I have since received authentic material of *Malva anomala*, which shows the figure in Link & Otto's *Plantæ Selectæ* to have been badly drawn, especially as regards the involucre and calyx. Link & Otto's plant is not the same as that of Ecklon & Zeyher; it comes nearest to a cultivated specimen from Goodenough's herbarium, now at Kew, which I refer to *Malvastrum capense* Gray & Harv. Presl's description of the genus is as follows:—"*Malva anomala* Link & Otto, *Ic.* p. 51, t. 22 (*Lavatera? tripartita* Cand. *Prod.* i. 440), ob involucrum cum calyce connatum peculiare genus (*Malveopsis anomala* Presl) esse meretur, non obstante fructu hucusque ignoto." This being the whole of the description, and not applicable to *Malvastrum* as at present understood, in many species of which the bracts are perfectly free, while many others are ebracteate, it seems to me that the generic name *Malvastrum* ought to stand, and that the revival of *Malveopsis* is undesirable.—E. G. Baker.

Potamogeton crispus L., var. cornutus mihi. — On examining some *P. crispus* last summer, which grew plentifully in a pond at Manston, Dorset, I noticed a peculiar excrescence on the gibbously rounded base of the back of the fruit, looking like a little spur or horn, pointing back towards the peduncle. I sent this to Mr. Arthur Bennett, both fresh and dried, to inquire whether this feature did not constitute a variety. Answering in the affirmative, he very kindly informed me that my specimens tallied with the description of one of the nine species formed by M. Gandoger out of the Linnean *P. crispus*, and which M. Gandoger named *P. macrorrhynchus* (*Oest. Bot. Zeitschrift*, No. 2, Wien, Feb. 1881). Mr. Bennett thinks my plant has this distinguishing character more pronounced than M. Gandoger's, judging from the description; but as it seems to me (and to Mr. Bennett also) out of the question to regard this Manston plant as a species, I propose the varietal name *cornutus*. The spur is subulate, or nearly linear above, and stands out $\frac{1}{20}$ in. from the surface of the drupelet, in the dried specimens. The leaves are rather slender, compared with specimens from running water, and also acute or subobtuse rather than

"obtuse or subobtuse," as in Syme's description; but I am not prepared to affix any other character to the variety at present than the spur on the fruit. The pond is in a clay district, and in a sunny situation.—Edward F. Linton.

Rubus mercicus b. bracteatus, n. var. — Prickles patent and longer than in type. Leaves greyer, those on the panicle often felted beneath. *Panicle much longer*, with long ascending branches, and *pyramidal ultra axillary top*, of (mostly) many-flowered patent erect branches. *Rachis and pedicels* (as well as the very strongly reflexed sepals) *conspicuously grey-felted. Bracteoles remarkably large and numerous*, mostly 3-cleft. This variety occurs in hedges and in large clumps on the waysides over a considerable portion of the Anker Valley, in Warwickshire, but I have not seen it elsewhere. Its habit is much that of *R. Lindleianus*, but the panicle is more open and more prolonged. The Rev. W. Moyle Rogers, to whom I sent specimens, agrees with me in considering it a marked variety of *R. mercicus*, and has kindly drawn up for me the description given above.—J. E. Bagnall.

Rubus rubicundus: a Correction (p. 139).—The Rev. W. Moyle Rogers has reminded me that the name *Rubus rubicundus* has been employed by Müller and Wirtgen to designate a different plant, and this was not free to be used by me. I much regret my oversight, and at Mr. Rogers's suggestion I propose to employ, instead of *rubicundus*, the name R. rubriflorus. I cannot find that this name has been employed, and if the word be not a classical one, it at least serves to mark a striking feature of the plant intended.—W. H. Purchas.

NOTICES OF BOOKS.

Hieracia alpina aus den Hochgebirgsgegenden des mittleren Skandinaviens. Von M. Elfstrand. Upsala: Almquist & Wibsells. 1893.

Brought up in close proximity to the mountains of Jemtland (probably the richest hunting-ground in Europe for the numerous *Hieracia* comprised in Fries' section *alpina*), enjoying the advantages of the intimate friendship, and acquintance with the views of such authorities as Almquist, Dahlstedt, and Norrlin, and with access to the fine collections of Upsala and Stockholm, Dr. Elfstrand has had opportunities for the pursuit of his favourite study which have fallen to the lot of few botanists.

The work before us is in the main a repetition of the earlier classification adopted by the same author in his *Botaniska utflygter* (*Bihang till K. Svenska Vet. Akad. Handl.* xvi. 6, No. 7, Stockholm, 1890), but with several new forms added which were collected during the summers 1890–2.

Alpina Fr. is now divided into three subsections, with the addition of the isolated species *H. depilatum* Almq., with its subspecies *pseudo-depilatum* Almq.

1. *Alpina genuina* embraces the larger portion of the forty odd species or forms described in this work, more than half of which are now published for the first time. Linnæus and other later authors included several forms under the name *H. alpinum*, and it is interesting to learn from Dr. Elfstrand that the plant described by Backhouse under that name (*Monogr. Brit. Hierac.* p. 17, 1856) is taken as the type species in Scandinavia, where it is of frequent occurrence on the high mountains.

2. *Alpina nigrescentia.* The author considers that the commonest and most representative species of this section, occurring in Middle Scandinavia, are *H. curvatum* Elf. and *H. atratum* Fr., detailed descriptions of which are found in the treatise. Forms of both these species have been found in Scotland.

3. *Alpina hyparctica* differs from *Alpina nigrescentia* in having floccose down on the margins of the inner and middle phyllaries, and in having usually violet-spotted leaves; this group is particularly interesting to British botanists, because one of our plants from the extreme North of Scotland has lately been identified as a form of the Greenland species, *H. hyparcticum* Almq.

The distinctive characters of *alpina genuina*, *alpina nigrescentia*, and the isolated species, *H. depilatum* Almq., will be found in Table I. at the end of the book. The characteristics of *H. hyparctica* are not given.

Besides indicating the leading features of the groups into which *H. alpina* Fr. may be divided, the author brings before our notice two forms belonging to *alpestria* Fr., and others belonging to *vulgata* Fr. The book ends with a full description of the true *H. nigrescens* Willd., and three excellent tables for the determination of the species in this great division. In these tables the specific characters are clearly defined, and by their use the somewhat difficult task of distinguishing one plant from another is rendered comparatively easy.

The Introduction contains useful advice as to the best methods of making observations on living plants. Certain essential characters become so altered or lost during the process of drying, that care should be taken to note them before the plant is pressed; among such points, for example, are the length, breadth, structure and form of the involucre, the colours of the inner, middle, and outer phyllaries, of the ligules, styles and stigmas, and whether the ligules are ciliate or not. All observations should be made with the aid of a lens, and not merely by the naked eye, on well-developed, not old or dying, specimens.

Dr. Elfstrand considers that sufficient importance has not hitherto been paid to the nature and quality of the clothing of the involucres; he would note whether this consists of simple black or white, curved or straight hairs, of white black-based hairs, of black- or yellow-headed setæ, &c. He lays special stress on a form of clothing which does not appear to have been noticed or described before, and to which he has given the name "microtrichs"; it consists of a mass of extremely small, dense bristles, occurring on the inner phyllaries of most of our *Archieracia*, but only to be distinguished by the aid of a powerful lens.

Other points to which the author draws attention as not having heretofore received sufficient notice are—the form of the innermost root-leaves, and the comparison between the base or foot of the involucral hairs, and the usually finer and clearer extremity; these two parts of the hairs are denoted in the descriptions of the plant as the "Fusztheil" (foot-part) and the "Spitztheil" (point-part). The quality of these "Spitztheile" is held to be of great importance in the arrangement of species. Several other new botanical terms for the clearer designation of the characters of *Hieracia* have been introduced, and we could wish that Dr. Efstrand had given us equivalent English or Latin terms. The "Hullbreite," as the name implies, is the breadth of the involucre, and is to be taken within the apparently non-persistent or dying phyllaries, if such are present (see note 1, page 3).

A footnote on page 3 tells us that in some species of *Alpina genuina*, viz., *alpinum*, *præmaturum*, and *frondiferum*, the somewhat numerous, outer non-persistent phyllaries are of nearly equal height, and form an "Aussenhulle" (outer involucre), a characteristic not observable in dried specimens.

As will have been already inferred, the work is in German. Its seventy-one pages and three charts not only afford a useful contribution to the literature of that section of *Hieracium* of which they specially treat, but contain hints on classification and description, many of which may with advantage be adopted when dealing with other portions of the genus.

FREDERICK J. HANBURY.

ARTICLES IN JOURNALS.

Bot. Centralblatt. (No. 19).—F. v. Herder, 'Alexander Theodor von Middendorf' (1815–1894).—(No. 20). P. Kunth, 'Die Bestäubungseinrichtungen der deutschen *Helleborus*-Arten.'

Bull. de l'Herb. Boissier (No. 3). — F. Crépin, 'Mes excursions rhodologiques dans les Alpes, 1891–2.' — J. Huber, 'Sur un état particulier du *Chætonema irregulare*' (1 plate). — R. Chodat, 'Polygalaceæ novæ.'—M. Tsmett, 'Sur quelques cas tératologiques dans l'anatomie de *Lycium*.' — H. Schinz, 'Beiträge zur Kenntniss der Afrikanischen Flora' (3 plates). — G. Schweinfurth, 'Sammlung Arabish-Æthiopischer Pflanzen.' — (No. 4). E. Levier, *Riccia Michelii* (1 plate).—C. J. F. Major & W. Barbey, 'Saria' (1 plate). —N. Alboff, 'Contributions à la flore de la Transcaucasie' (2 plates). C. Rouler, 'Étude comparée du genre *Thunbergia*.' — P. Couralt, *Cytisopsis spinosa*, sp. n. — (No. 5). C. J. F. Major & W. Barbey, 'Kasos.' — H. Solereder, 'Ueber die Zugehörigkeit des von Masters als *Bragantia Wallichii*.'—E. de Wildeman, '*Pleurococcus nimbatus*.'

Bull. Soc. Bot. France (xli, 2: April).—H. Coste et —. Sennen, 'Plantes adventices dans la vallée de l'Orb (Hérault).' — E. Mesnard, 'Sur la localisation des huiles grasses.' — P. Van Tieghem, 'Structure de la racine dans les Loranthacées parasites.' — Id.,

'Classification des Loranthacées.' — J. Godefrin, 'Du bourgeon dans le Sapin argenté.'

Bull. Torrey Bot. Club (Ap. 25). — E. G. Britton, 'Western species of *Orthotrichum*: note on *Weissia*.' — C. de Candolle, 'New *Piperaceæ* from Bolivia.' — T. F. Allen, '*Chara gymnopus* A. Br., and new species of *Chara* and *Nitella*' (8 plates). — J. K. Small, 'New and interesting Polygonums' (4 plates).

Erythea (May).—E. L. Greene, 'Observations on *Compositæ*.'— Id., 'American species of *Wulfenia*.' — A. J. M'Clatchie, *Ribes hesperium*, *R. amarum*, & *R. nubigenum*, spp. nn. — A. Davidson, 'Californian Field Notes.'

Gardeners' Chronicle (Ap. 28).—H. N. Ridley, '*Pothos flexuosus*' (fig. 65) (= *Anadendrum medium*).—(May 5). A. Engler, *Saxifraga apiculata*, sp. n. (fig. 68). — J. R. Jackson, 'Whampoa Bamboo' (figs. 69, 70). — (May. 12). *Antholyza Schweinfurthii* Baker, sp. n. —(May 19). *Gazania bracteata* N. E. Br., sp. n.

Journ. de Botanique (May 1).—C. Sauvageau, 'Notes biologiques sur les *Potamogeton*.' — G. Poirault, 'Les Urédinés et leurs plantes nourricières.'—E. Bescherelle, 'Selectio novorum Muscorum.'

Journ. Linn. Soc. (xxx, 207: Mar. 19). — A. B. Rendle, 'Revision of *Nipadites*' (2 plates).—A. L. Smith, 'Anatomy of a plant from Senegambia' (1 plate). — W. B. Hemsley, 'Flora of Tonga Islands': 3 plates, *Saravanga*, gen. nov. (Pandanaceæ).

Oesterr. Bot. Zeitschrift (May). — F. Kränzlin, 'Orchidaceæ Papuanæ.'—E. Heinricher, 'Neue Beiträge zur Pflanzenteratologie.' — R. v. Wettstein, 'Die Arten der Gattung *Euphrasia*.' — F. Matouschek, 'Die Adventivknospen an den Wedeln von *Cystopteris bulbifera*' (1 plate).—F. Arnold, 'Lichenologische Fragmente.'

BOOK-NOTES, NEWS, &c.

Arthur Hill Hassall was born at Teddington, Middlesex, on the 13th of December, 1817. The account of his early days and education published last year in his autobiography entitled *The Narrative of a Busy Life* is an interesting record of the manners and customs of the earlier part of the century. In 1834 he went to Dublin to study in the Dublin School of Medicine, where he took a prize for botany—a study which he had begun in very early years when living at Richmond, where he collected plants and was an enthusiastic gardener. At Dublin he took up with energy the study of zoophytes, and became a correspondent of George Johnston and a friend of Prof. Allman. On his return to England, about 1838, he settled at Richmond, and, with the encouragement of Sir W. J. Hooker and Mr. John Smith, resumed his botanical investigations: his first botanical paper, on the function performed by the hairs on the stigma of *Campanulaceæ*, &c., was published in the *Annals of Natural History* in 1842. He became M.R.C.S. in 1839, and Licentiate of the Apothecaries' Company in 1841. Before he began to practise, Hassall lived for a time at Cheshunt, Herts. Here he

took up the investigation of the freshwater algæ, with which his name as a botanist has become associated. He published numerous papers upon these plants, and his *History of British Freshwater Algæ*, issued in 1845 and more than once reissued, was the outcome of these essays. With Hassall's public career as an analyst we are not concerned; this and other matters are fully dealt with in his autobiography. In 1877 his failing health induced him to settle at San Remo: here he continued his interest in scientific subjects to the last—two papers on the coloration of leaves, written in 1892, are appended to the *Narrative*—and here he died on the 9th of April. He was commemorated by Berkeley in the genus *Hassallia*, now merged in *Stigonema*.

Dr. George Bennett, whose death we briefly recorded on p. 31, was born at Plymouth on January 31st, 1804, and had but just left school when at the age of fifteen he made a voyage to Ceylon. On his return to England he began his medical studies, and in 1828 became M.R.C.S. Soon after this he entered as surgeon to a merchant vessel, and in the course of his voyage he visited Australia, and there made some observations on the peculiar mammals of the continent. He revisited that country in 1832 for more detailed study of the fauna, and in 1834 published his *Wanderings in New South Wales*. Although, like most of his work, mainly devoted to ornithology, this book contains a good deal of information about plants, chiefly in their economical aspect. In 1836 he settled in Sydney, soon acquiring a large practice, but still contrived to continue his natural history pursuits. A founder of the Australian Museum, he afterward became its secretary, and when trustees were appointed, a member of the Board of Management. Dr. Bennett published numerous papers, principally dealing with ornithology; his botanical contributions will be found for the most part in the earlier volumes of this Journal. He was made M.D. of Glasgow in 1859, and in 1860 published his *Gatherings of a Naturalist in Australasia*. He came to England from time to time, visiting the British Museum and other places of scientific resort, and always manifesting keen interest in the progress of science. He was at the time of his death, which took place in Sydney on Sept. 29, 1893, one of the oldest Fellows of the Linnean Society, having been elected to that body in 1831.

Thomas Lobb, the botanical collector, whose name was prematurely included in the *Bibliographical List of British Botanists*, died on April 30, "at a very advanced age," at Devoran, Cornwall. An account of his collections and introductions will be found in the *Gardeners' Chronicle* for May 19.

We have received from Mr. A. H. Baird, 15, Lothian Street, Edinburgh, a Craig-Christie's dissecting microscope stand, price without lenses, 1s.; 3d. extra by post. A firm base supports a brass rod, up and down which slides an arm of brass wire; one end of the arm is looped to hold a watchmaker's lens, and the other is bent to accommodate "a three-power botanical lens." We are told that, "when the arm is rotated, each lens finds the same centre," but as Mr. Baird does not transmit lenses, we are unable to test this.

He also sends a simple water bath with a movable rim, allowing a larger or smaller aperture as desired; price 4d., or by post 6d.

We regret the delay in noticing Mr. Crombie's *Monograph of Lichens found in Britain*. Prof. Th. Fries, who had hoped to undertake it, has been prevented from doing so by pressure of official and other duties. He writes:—"The work seems to have been executed with much carefulness and diligence, and deserves putting forth as very meritorious. My having views different from those of the author on certain questions about principles does not prevent me from pronouncing this opinion."

Messrs. Blackie & Son have undertaken the publication of an English translation, by Prof. F. W. Oliver, of Prof. Kerner's *Pflanzenleben*. The work is to be issued in sixteen monthly parts (price 2s. 6d., net), the first of which is before us. Whether, as the somewhat effusive advertisement has it, this is "one of the greatest works in Botany ever issued from the press" may perhaps be doubted; but it is an admirable history of plant-life in its various aspects, rendered more attractive by excellent original woodcuts, about a thousand in number, and sixteen coloured plates. We hope to say more about the book later on; meanwhile it is safe to predict for it in its handsome English dress the large sale which it deserves. It is, we think, a little to be regretted that another title could not have been found: that at present employed—*The Natural History of Plants*—is already occupied by the English translation of Prof. Baillon's *Histoire des Plantes*, and moreover hardly corresponds with the original.

The first fascicle of Messrs. E. F. and W. R. Linton's Set of British Willows has been published. The specimens are very carefully selected, and well dried, and the fascicle contains twenty-five numbers, which are, however, mostly cultivated examples of our well-known and commoner species and hybrids rather than critical or obscure plants. We have, for instance, *S. pentandra*, *S. fragilis*, *S. alba*, *S. viminalis*, *S. aurita*, *S. Caprea*, &c., included in the series. Amongst the more interesting sheets we may notice No. 5, *S. purpurea* var. *Woolgariana* Borrer, with catkins less stout than those figured in *English Botany*, but with the oblanceolate leaves, and other characters, so different from type *S. purpurea*. No. 6 is *S. purpurea* × *repens* (*S. Doniana* Sm.), rather more glabrous than usual. No. 14 is *S. cinerea* × *phylicifolia* (*S. laurina* Sm.). Nos. 16 & 17 are *S. aurita* × *cinerea* (*S. lutescens* Kerner), No. 16 being the usual form, but No. 17 is a peculiar plant, suggesting an intermingling of *S. Caprea*. It is explained by the authors as due to the presence of a soft-haired *S. aurita* occurring in the neighbourhood of its habitat. A very pretty hybrid is No. 18, *S. aurita* × *Myrsinites*, and No. 25 is *S. Grahami* Borrer MS., which has been cultivated at Bournemouth from cuttings received from Balmuto.

The concluding part of the useful *Manual of Orchidaceous Plants*, issued by the Messrs. Veitch, has recently appeared. We hope to notice it later.

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* See 'Bidrag till Sydöstra Sveriges Hieracium-Flora,' af Hugo Dahlstedt, ii. 1893.
† See 'Bidrag till Hieracium-Floran,' J. P. Norrlin. 1888.
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its productive capacity. By removing or diminishing the number of individuals of other species during the ordinary operations of thinning and tending, or, if necessary, even in special revisions for this purpose, the probable immediate future requirements of the timber marts within reach can be more economically, conveniently, and speedily arranged for than when one has to deal with pure forests only.

As an example of this the safety-match industry throughout Norway, Sweden, and Germany, may be instanced. The woods best suited for the requirements of this industry are Willows, Aspen, and Poplars; and it very frequently occurs that the match-factories have to be removed from one district to another solely on account of the supplies of suitable timber falling off. The heavy expenses thus involved mean that if steps were taken to provide better supplies of these softwoods, the factory proprietors could well afford to pay higher rates to secure them. The full advantage of such favourable markets can only be derived when patches of moist soil have been utilized for the growth of these softwoods in mixed deciduous forests.

6. *Experience has shown that Mixed Woods are much less exposed than Pure Forests to dangers from external causes, whether of organic or inorganic origin.* Shallow-rooting species, like the Spruce in particular, when mixed with deeper-rooting kinds of trees, like Pine, Larch, and Silver Fir, are much less exposed to be damaged or thrown by storms than when grown in pure crops; whilst conifers of all kinds suffer less damage from wind, fire, snow, ice, insects, or fungoid diseases, when grown in admixture with broad-leaved trees than if forming pure woods, or even mixed woods consisting of conifers only.

If associated along with broad-leaved trees, conifers usually attain a better development than under any other circumstances. This alone would partly account for the decreased liability to attacks from insect enemies; whilst, at the same time, a much better check is kept on any tendency to increase

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NORTH DERBYSHIRE MOSSES.

By John Whitehead.

The portion of Derbyshire with which I propose to deal is included in the district which commences near Ashbourne and Matlock in the south, and extends to Glossop and the extensive moorlands drained into the head waters of the Derwent and Etherow in the north. The geological formation of the southern part of the division which extends from Ashbourne and Matlock to Chapel-en-le-Frith and Castleton is mostly mountain limestone, thus accounting for the occurrence of so many limestone-loving mosses. The northern part of the division is on the millstone grit and coal measures, and includes Kinder Scout, the highest point of the county, with the extensive moorlands surrounding it. That the district is favourable to mosses, and has been well worked by experienced collectors, is shown by the following list, containing 273 species and about 51 varieties, being not far from one-half the number recorded for Great Britain and Ireland.

The names of collectors follow the localities. The author is responsible for those followed by !

Sphagnum acutifolium Ehrh. Frequent on Kinder Scout, Charlesworth Coombs, and near Buxton. — b. *deflexum* Schpr. Kinder Scout, *Holt* ! — c. *lætevirens* Braithw. Kinder Scout, *Holt* ! — Var. m. *patulum* Schpr. Kinder Scout, *Holt* ! — *S. fimbriatum* Wils. Kinder Scout. — *S. strictum* Lindb. Kinder Scout, *Holt* ! — *S. squarrosum* Pers. Charlesworth Coombs ; Kinder Scout. — *S. intermedium* Hoffm. Charlesworth Coombs ; Kinder Scout. — *S. cuspidatum* Ehrh. Kinder Scout ; Axe Edge, near Buxton. — *S. rigidum* Schpr. var. b. *compactum* Brid. Kinder Scout ! — Var. c. *squarrosulum* Russ. Kinder Scout, *Holt* ! — *S. subsecundum* Nees. Kinder Scout ; Charlesworth. — Var. b. *contortum* Schultz. Charlesworth Coombs ; Kinder Scout. — Var. d. *auriculatum* Schpr. Kinder Scout ! — *S. papillosum* Lindb. Kinder Scout, *Holt* ! — *S. cymbifolium* Ehrh. Charlesworth Coombs ; Kinder Scout. — Var. c. *squarrosulum* Nees. Kinder Scout, *Holt*.

Andreæa petrophila Ehrh. Charlesworth Coombs ; Kinder Scout ; Edale. — *A. crassinervia* Bruch. Kinder Scout, *West ;* near Woodhead !

Gymnostomum rupestre Schwg. var. b. *ramosissimum* Br. & Sch. Castleton, *Rogers ;* Miller's Dale, *Holt*. — *G. calcareum* Nees & Horn. Chee Dale, *Holmes ;* Monsal Dale, Raven's Dale, and Ashwood Dale, *Holt*. — *G. curvirostrum* Ehrh. Wet rocks, Castleton, *Holt* ! — Var. b. *commutatum* Mitt. Raven's Dale, *Holt*. — *G. microstomum* Hedw. Castleton ; Monsal Dale, Miller's Dale, and Lathkill Dale. — *G. squarrosum* Nees & Horn. Banks at Mellor, *Scholefield*. — *G. tortile* Schwg. Lathkill Dale, *Wilson ;* Ashwood Dale !

Weissia viridula Brid. Banks at Edale ; Cressbrook Dale ; Whaley Bridge and Mellor. — *W. cirrhata* Hedw. Rocks and walls, Charlesworth ; Mellor and Whaley Bridge.

Cynodontium Bruntoni Sm. Matlock, *Cash.*

Dichodontium pellucidum L. Wet rocks, Charlesworth, Kinder Scout, and Chapel-en-le-Frith.—*D. flavescens* Dicks. Matlock and Rowsley, *Wilson;* Castleton !

Dicranella Schreberi Hedw. var. b. *elata* Schpr. Clay bank, Stirrup Wood, Charlesworth !—*D. squarrosa* Schrad. Charlesworth Coombs and Kinder Scout. — *D. cerviculata* Hedw. Charlesworth Coombs and Kinder. — *D. varia* Hedw. Frequent on clay banks. — Var. d. *callistoma* Dicks. Ashwood Dale, *Holt.* — *D. rufescens* Turn. Clay banks, Charlesworth, Mellor and Hayfield, Edale and Coombs Moss.—*D. heteromalla* Hedw. Common.

Dicranum fuscescens Turn. Charlesworth Coombs, Kinder Scout !—Var. b. *falcifolium* Braithw. Kinder Scout, Charlesworth Coombs, *Scholefield* ! — *D. scoparium* L. Frequent. Charlesworth Coombs and New Buxton. — Var. b. *orthophyllum* Schpr. Corn-meadow near Hayfield, *Holt.* — Var. c. *paludosum* Schpr. Kinder Scout, *Holt.*—*D. majus* Turn. Frequent. Fernilee, near Buxton, *Gordon.*—*D. Bonjeani* De Not. Charlesworth and Kinder Scout.

Dicranodontium longirostre Web. & Mohr. Stirrup and White-bottom Woods. Charlesworth ! Kinder Scout, *Holt.*

Campylopus atrovirens De Not. Kinder Scout, *Gordon.* — *C. flexuosus* Brid. Charlesworth Coombs, Kinder Scout, and Cromford. —Var. b. *paradoxus* Wils. Kinder Scout ! — *C. setifolius* Wils. Raven's Dale, *Barker.*—*C. fragilis* Br. & Sch. Chee Tor, Matlock, Miller's Dale, *Holt.* Kinder Scout and Mellor ! — *C. pyriformis* Brid. Kinder Scout, *Holt.*

Leucobryum glaucum L. Kinder Scout, Charlesworth, Coombs, and near Glossop.

Pleuridium nitidum Hedw. Clay banks, Charlesworth and Chapel-en-le-Frith.—*P. subulatum* L. Mellor.

Seligeria Donii Sm. Shady limestone rocks, Castleton ! Ashwood Dale, Raven's Dale, and Monsal Dale, *Holt.* — *S. pusilla* Hedw. Castleton ! — *S. acutifolia* Lindb. var. b. *longiseta* Lindb. Lover's Leap, Buxton, *Wilson;* Tideswell Dale, Miller's Dale, and Chee Dale ! Raven's Dale and Taddington Dale, *Holt.* — *S. calcarea* Dicks. Taddington Dale, *Holt.* — *S. tristicha* Brid. Miller's Dale, *P. Cunliffe;* Castleton, *Rogers & Cunliffe.*—*S. recurvata* Hedw. Kinder Scout and Monsal Dale !

Campylosteleum saxicola Web. & Mohr. Near Crick and Rowsley, *Wilson.*

Blindia acuta Hedw. Kinder Scout and Edale, *Holt.*

Sphærangium muticum Schreb. Charlesworth !

Phascum cuspidatum Schreb. Miller's Dale, Tideswell Dale, Chapel-en-le-Frith.—*P. bryoides* Dicks. Wormhill, *J. Nowell*, 1845. Miller's Dale, *R. Scholefield* ! Buxton, *Wood;* Monsal Dale, *Ashton;* Chee Dale !—*P. rectum* Sm. Miller's Dale and Monsal Dale !

Pottia cavifolia Ehrh. Miller's Dale, *Cunliffe.* — *P. minutula* Schwg. Miller's Dale !—*P. truncata* L. Frequent.—*P. intermedia* Turn. Miller's Dale, *Tetlow.* — *P. lanceolata* Dicks. Taddington Dale, Monsal Dale, and Miller's Dale !—*P. Starkei* Hedw. Buxton, *Hunt.*

Didymodon rubellus Hoffm. Frequent on walls. — Var. b. *dentatus* Schpr. Miller's Dale, *West.* — *D. flexifolius* Dicks. Near Buxton, *Dr. Greville.* Charlesworth Coombs ! Kinder Scout, *Holt* ! — *D. cylindricus* Bruch. Kinder Scout, *Holt.* — *D. sinuosus* Wils. Monsal and Miller's Dales, *Holt.* Chee Dale !

Eucladium verticillatum L. Peak Forest and Chee Dale !

Ditrichum homomallum Hedw. Stirrup Wood; Charlesworth Coombs; Kinder Scout ! Castleton, *Holt.* — *D. flexicaule* Schwæg. Common on limestone walls.—Var. b. *densum* Schpr. Miller's Dale, *Holt.* Lathkill Dale !

Trichostomum tophaceum Brid. Kinder Scout and Miller's Dale. —*T. brachydontium* Brid. Lathkill and Taddington Dales ! — Var. b. *cophocarpum* Schpr. Chee Dale ! Cave Dale, Castleton; Tideswell and Taddington Dales. — *T. crispulum* Bruch. Cave Dale, Castleton, *West.* Chee Dale, *Holt* ! — Var. d. *nigro-viride* Braithw. Monk's Dale, *Holt.*—*T. nitidum* Lindb. Dove Dale, *Holmes.*

Barbula brevirostris Br. & Sch. Ashwood Dale, *George.*—*B. stellata* Schreb. (*rigida* Schultz). Walls at Peak Forest and Topley Pike ! —*B. aloides* Koch. Frequent on walls in the limestone dales.—*B. muralis* L. Common on walls. — Var. c. *rupestris* Schultz. Frequent on rocks and walls in the limestone districts. — *B. unguiculata* Dill. Frequent on the limestone. Abundant at Matlock. —Var. e. *obtusifolia* Schultz. Miller's Dale, *Holt.*—*B. fallax* Hedw. Frequent in Ashwood and Miller's Dales. — Var. c. *brevifolia* Sm. Chapel-en-le-Frith ! Buxton and Miller's Dale, *Holt.* — *B. reflexa* Brid. Walls, Chapel-en-le-Frith, Buxton and Miller's Dales, Matlock, Castleton.— *B. rigidula* Dicks. Walls, Whaley Bridge; Ashwood Dale. Castleton, *Holt.*— *B. spadicea* Mitt. Buxton, *Wilson.* Dove Dale, *Holmes.* Castleton ! — *B. cylindrica* Tayl. Buxton, Matlock, and Castleton ! — *B. Hornschuchii* Schultz. Cromford, Miller's Dale, *Holt, Hunt.* — *B. revoluta* Schwg. Walls, Buxton; Miller's Dale, Chapel-en-le-Frith. — *B. convoluta* Hedw. Frequent on banks and walls.— *B. tortuosa* L. Frequent on rocks and walls on the limestone. Ashford, *Nield & Ashton.* — *B. squarrosa* Brid. Lathkill Dale ! — *B. subulata* L. Frequent on banks and walls in the limestone dales. — *B. lævipila* Brid. On trees, Dove Dale; Chapel-en-le-Frith ! Monsal Dale, *Holt.*—*B. rivalis* L. Old walls, Ashwood Dale; Wormhill; Dove Dale; Castleton. — *B. montana* Nees (*intermedia* Brid.). On rocks and walls in the limestone dales. —*B. princeps* De Not. Near Buxton, *S. Ashton.* Near Miller's Dale, *Cash.*

Trichodon cylindricus Hedw. Matlock, *Wilson.*

Ceratodon purpureus L. Common on banks and walls.

Distichium capillaceum Br. & Schimp. Ashwood Dale, *Holt.*

Encalypta extinctoria L. (*vulgaris* Hedw.). Hartington, Dove Dale. — Var. b. *pilifera* Funck. Castleton, Miller's Dale, and Lathkill Dale ! — Var. c. *obtusifolia* Funck. Miller's Dale and Lathkill Dale ! — *E. contorta* Wulf. (*streptocarpa* Hedw.). Rather abundant on the limestone. Youlgreave, *Bowman.*

Grimmia apocarpa L. Walls, Ashwood Dale; Kinder Scout; Whaley Bridge. — Var. e. *pumila* Schpr. Miller's Dale, *Holt.*—

G. pulvinata Dill. Frequent. — *G. trichophylla* Grev. Rowsley, *Boswell.* Chee Dale, *Holt.* Kinder, near Hayfield ! — *G. Donii* Sm. Walls, Kinder Scout; Castleton and Fernilee, near Buxton ! Axe Edge, *Holmes.* Charlesworth, *Tinker.*

Rhacomitrium aciculare L. Charlesworth Coombs and Kinder Scout. — Var. b. *denticulatum* Wils. Kinder Scout and Stenior Clough ! — *R. heterostichum* Hedw. Stenior Clough and near Buxton. — *R. fasciculare* Schrad. Charlesworth Coombs; Kinder Scout; Stenior Clough, and near Buxton. — *R. obtusum* Sm. Kinder Scout ! — *R. hypnoides* L. (*lanuginosum* Hedw.). Kinder Scout, Charlesworth Coombs, and Chee Dale. — *R. canescens* Hedw. Fernilee, near Buxton. — Var. b. *ericoides* Schrad. Fernilee; Chee Dale, Kinder Scout, and Chapel-en-le-Frith.

Ptychomitrium polyphyllum Dicks. Walls, Ashwood Dale; Fernilee, near Buxton; Kinder Scout.

Amphoridium Mougeotii Br. & Sch. Near Woodhead; Stenior Clough; Ashwood Dale; Kinder Scout.

Zygodon viridissimus Dicks. On trees, Monsal Dale, *Holt.* Matlock and Chapel-en-le-Frith !—Var. b. *rupestris* Lindb. Castleton and Miller's Dale, *Holt.* — *Z. Stirtoni* Schpr. Ashwood Dale, *Hunt.* Chee Dale and Miller's Dale, *Holt.*

Ulota Drummondii Grev. On trees near Whaley Bridge, *Scholefield* !—*U. Bruchii* Hornsch. On trees, Monsal Dale.

Orthotrichum anomalum Hedw. var. b. *cylindricum* Schpr. On limestone rocks and walls, rather frequent. — *O. cupulatum* Hoffm. Frequent on limestone rocks and walls. — Var. b. *nudum* Dicks. Miller's Dale and Monsal Dale, *Holt.* Chee Dale ! — *O. affine* Schrad. On walls, Chapel-en-le-Frith and near Whaley Bridge. On trees, Topley Pike. — Var. b. *rivale* Wils. By the Wye, Chee Dale and Monsal Dale ! Miller's Dale, *Holt.* — *O. stramineum* Hornsch. Matlock Bridge, *Spruce.* Monsal Dale, *Holt.* — *O. tenellum* Bruch. Matlock Bridge, *Spruce.* — *O. diaphanum* Schrad. Miller's Dale; Matlock Bath; Fernilee, near Buxton. — *O. Lyellii* Hook. On a tree, Ashwood Dale.—*O. Sprucei* Mont. On trees by the Derwent, Matlock, *Spruce.* — *O. rivulare* Turn. By the Wye, Chee Dale !

Splachnum sphæricum L. fil. Kinder Scout.

Discelium nudum Dicks. Clay banks, Charlesworth ! Milton Reservoir, Chapel-en-le-Frith, *Barker.*

Ephemerum serratum Schreb. Hedge-bank, Charlesworth !

Physcomitrella patens Hedw. Milton Reservoir, Chapel-en-le-Frith, *Barker.*—Var. b. *Lucasii* Nees & Hornsch. Milton Reservoir, Chapel-en-le-Frith, 1887, *Barker.*

Physcomitrium sphæricum Schwg. Milton Reservoir, Chapel-en-le-Frith, *Barker*, 1893.—*P. pyriforme* L. Charlesworth and Chapel-en-le-Frith.

Funaria calcarea Wahl. Matlock and Miller's Dale, *Wilson.* Castleton, Wormhill, and Taddington Dale ! — *F. hygrometrica* L. Common on banks and walls.

Bartramia pomiformis L. Stirrup Wood, Charlesworth; Charlesworth Coombs; Kinder Scout.—*B. Oederi* Gunn. Limestone rocks, Castleton and Ashwood Dale,

Philonotis fontana L. Charlesworth, Coomb, and Kinder Scout; Castleton; Fernilee, near Buxton.—*P. calcarea* Br. & Sch. Kinder Scout and Chee Dale, male plants only !

Breutelia arcuata Dicks. Chee Dale and Kinder Scout.

Leptobryum pyriforme L. Shady limestone rocks, Castleton !

Webera cucullata Schwg. Kinder Scout. New to England !—*W. nutans* Schreb. Not uncommon on the millstone grit and coal measures.—*W. cruda* Schreb. Miller's Dale, *Holt*. Castleton !—*W. annotina* Hedw. Kinder, near Hayfield; Charlesworth.—Var. c. *angustifolia* Schpr. Castleton, *West*.—*W. carnea* L. Clay banks at Charlesworth.—*W. albicans* Wahl. Banks at Castleton; Stenior Clough, Stirrup Wood, Charlesworth, and Kinder Scout.

Zieria julacea Schpr. Cressbrook Dale, *Holt*. Cave Dale, Castleton, *West*.

Bryum pendulum Hornsch. Wall near Chapel-en-le-Frith.—*B. inclinatum* Sw. Wall in Miller's Dale.—*B. intermedium* Web. & Mohr. Walls, Miller's Dale and Charlesworth.—*B. affine* Bruch. (*cuspidatum* Schpr.). Buxton, *Hunt*.—*B. pallescens* Schleich. Monsal Dale, *Holt*.—*B. bicolor* Dicks. (*atropurpureum* Web. & Mohr.). Ashwood Dale !—Var. b. *gracilentum* Tayl. Near Castleton, *West*.—*B. cæspiticium* L. Walls near Tideswell and Bakewell.—*B. argenteum* L. Common.—*B. capillare* L. Frequent on walls.—Var. b. *macrocarpum* Hueben. Wall at Castleton !—*B. pallens* Swartz. Ashwood Dale, Miller's Dale, Monsal Dale, Chapel-en-le-Frith, and Matlock.—*B. ventricosum* Swartz. (*pseudo-triquetrum* Hedw.). Wet bank near Castleton. Near Woodhead, male plant. Charlesworth.—*B. roseum* Schreb. Cressbrook, *Holt*. Chee Dale, Castleton, and Stirrup Wood, Charlesworth.—*B. filiforme* Dicks. Edale, *Holt* !

Mnium cuspidatum Hedw. Chee Dale and Matlock !—*M. affine* Bland. Monsal Dale; Matlock.—Var. c. *rugicum* Laur. Monsal Dale, *Holt*.—*M. undulatum* Hedw. Common. Ashwood Dale, Monsal Dale, and Matlock.—*M. rostratum* Schrad. Stirrup Wood, Charlesworth; Whitebottom Wood, Charlesworth; Lover's Leap, Ashwood Dale.—*M. hornum* L. Frequent in fruit.—*M. serratum* Schrad. Fernilee Wood, near Buxton, *Gordon*. Matlock !—*M. stellare* Hedw. Odin Mine, Castleton, *Holt*, 1882. Ashwood Dale, Taddington Dale, Edale, and other places.—*M. punctatum* Hedw. Rather common in woods and shady places.—*M. subglobosum* Br. & Sch. Kinder Scout and Charlesworth Coombs ! Carmeadow, near Hayfield, *Holt*.

Aulacomnium palustre L. Charlesworth Coombs and Kinder Scout.

Tetraphis pellucida L. Rather frequent. Stirrup Wood, Charlesworth, and Whitebottom Wood !

Tetrodontium Brownii Dicks. Kinder Scout, *Holt* !

Oligotrichum hercynicum Ehrh. (*incurvum* Hedw.). Kinder Scout and Edale.

Atrichum undulatum L. Common in woods and on shady banks.

Pogonatum nanum Neck. Clay bank at Charlesworth, *Clough*.—*P. aloides* Hedw. Rather frequent on clay banks.—*P. urnigerum*

L. Charlesworth Coombs; Kinder Scout; Buxton; near Whaley Bridge; Chapel-en-le-Frith.—*P. alpinum* L. Kinder Scout, *Clough.*

Polytrichum gracile Menz. Stirrup Wood, Charlesworth; Ernicroft Wood, *Mellor.* — *P. attenuatum* Menz. (*formosum* Hedw.). Monsal Dale! — *P. piliferum* Schreb. Charlesworth Coombs; Raworth; Kinder Scout! Stenior Clough.— *P. juniperinum* Willd. Charlesworth Coombs, *Scholefield.* — *P. strictum* Banks. Kinder Scout, *Holt*! — *P. commune* L. Abundant on the moorlands in the northern district.

Fissidens bryoides Hedw. Stirrup and Whitebottom Woods, &c. —*F. exilis* Hedw. Clay banks, Charlesworth!—*F. incurvus* Stark. Clay banks, Charlesworth, and near Whaley Bridge!—*F. viridulus* Swartz. Banks at Mellor, *Scholefield.* — *F. pusillus* Wils. Chee Dale! Lover's Leap, Buxton, *Hunt.*—*F. minutulus* Sull. Stirrup Wood, Charlesworth, *Messrs. Gordon, Nield, Ashton, & Tetlow.* — *F. fontanus* Schpr. (*crassipes* Wils.). Monsal Dale, Raven's Dale, *Holt.* —*F. osmundoides* Hedw. Abundantly in fruit at Kinder Scout. Edale, *Holt*!— *F. crispatus* Wils. (*decipiens* De Not.). Frequent in Ashwood Dale, Miller's Dale, and Stenior Clough!— *F. adiantoides* Hedw. Stirrup Wood, Charlesworth; Kinder Scout; and Fernilee, near Buxton. — *F. taxifolius* L. Clay banks, Charlesworth, and near Whaley Bridge.

Schistostega osmundacea Dicks. Shady rocks, Charlesworth Coombs, and in an old coal drift near New Mills! Cratcliff Tor, near Youlgreave, *Pullinger.*

Cinclidotus fontinaloides Hedw. On stones in the Wye at Chee Dale and Miller's Dale. On stones in the river in Dove Dale.

Fontinalis antipyretica L. Not uncommon in the streams on the limestone, such as the Wye, Dove, and Lathkill rivers. — Var. b. *gigantea* Sull. Miller's Dale, *Holt.* — Var. c. *gracilis* Lindb. Charlesworth Coombs! Carmeadow, near Hayfield, *Holt.* — *F. squamosa* L. Kinder Scout. In the Goyt, near Fernilee, Buxton, *Clough.*

Hedwigia ciliata Dicks. Kinder Scout and Fernilee, near Buxton.

Leucodon sciuroides L. Limestone wall, Hartington, in Dove Dale. With abortive setæ near Matlock and Bakewell, *Wilson.*

Neckera pumila Hedw. Derbyshire, *Wilson.*— *N. crispa* L. On rocks in the limestone dales. Mostly Chee Dale. — Var. b. *falcata* Boulay. Castleton!—*N. complanata* L. rare on the coal measures. Common on walls in the limestone dales. Monsal Dale, *Holt.*

Homalia trichomanoides Schreb. Fernilee, near Buxton; Matlock Bath!

Pterygophyllum lucens L. Stirrup Wood. Woods at Mellor; Fernilee, near Buxton; Lover's Leap, Buxton; Kinder Scout.

Leskea polycarpa Ehrh. On stones by the Wye. Chee Dale. On trees by the Wye. Miller's Dale, Cressbrook Dale, and Monsal Dale. By the Derwent, in Chatsworth Park.

Anomodon viticulosus L. Common on limestone rocks and walls. Miller's Dale!

Heterocladium heteropterum Bruch. Wet Rocks. Stirrup Wood, Charlesworth, Mellor, and Kinder Scout.

Thuidium tamariscinum Hedw. Not uncommon. Fernilee and Chee Dale. — *T. recognitum* Hedw. Romantic rocks at Matlock Bath, 1790, and again in July, 1820, with perfect fruit, *Sir J. E. Smith* (Herb. Smith), Wilson's *Bryologia*. In the above place in 1884 ! Monsal Dale, *Holt*.

Thamnium alopecurum L. Wet rocks at Charlesworth and Mellor. Rather plentiful on wet rocks in the limestone dales, but the fruit is rather rarely produced.—Var. *angustifolium* Holt. Wet rocks, Raven's Dale, *Holt*.

Climacium dendroides L. Marshy meadow, Charlesworth, with abundance of fruit, *Scholefield* ! Matlock Bath, Cave Dale, Castleton, and Kinder Scout.

Pylaisia polyantha Schreb. On trees, Matlock Bath !

Isothecium myurum Poll. On trees, Fernilee, near Buxton; Lathkill Dale.

Orthothecium intricatum Hartm. Chapel-en-le-Frith, *Barrat*. Castleton, *West*. Chee Dale !

Homalothecium sericeum L. Rare on the coal measures. Plentiful on limestone rocks and walls.

Camptothecium lutescens Huds. Rather frequent on limestone rocks and walls. Ashwood Dale, *Scholefield*. Near Wormhill !

Scleropodium cæspitosum Wils. Miller's Dale ! Cressbrook, *Holt*.

Brachythecium glareosum Br. & Sch. On banks, Ashwood Dale and Fernilee, near Buxton; Over Haddon; Chapel-en-le-Frith.—*B. velutinum* L. Frequent. Mellor, Whaley Bridge, Miller's Dale, and Ashwood Dale.—*B. rutabulum* L. Rather common throughout the district.—*B. rivulare* Br. & Sch. Wet rocks, Kinder Scout and Castleton. — *B. populeum* Hedw. Whitebottom Wood, Charlesworth; Fernilee, near Buxton; Mellor. — *B. plumosum* Sw. Stirrup Wood, Charlesworth; near Glossop; Kinder, near Hayfield.

Eurhynchium myosuroides L. Wood at Fernilee, near Buxton; Whitebottom Wood; Charlesworth; Edale.—*E. striatulum* Spruce. Wormhill, *West*. — *E. striatum* Schreb. Stirrup Wood, Charlesworth; hedge-bank, Mellor; and near Whaley Bridge. — *E. crassinervium* Tayl. By the Wye, in Chee Dale and Miller's Dale. Limestone rocks, Castleton ! Matlock, *Wilson*. — *E. piliferum* Schreb. Whitebottom Wood, Charlesworth; Fernilee, near Buxton; Cressbrook Dale, Over Haddon, and Castleton. — *E. Swartzii* Turn. Stirrup and Whitebottom Woods, Charlesworth. Dell at Mellor; Castleton. — *E. prælongum* Dill. Frequent in woods on the coal measures, Whitebottom Wood, and Whaley Bridge. — *E. pumilum* Wils. Stirrup Wood, Charlesworth ! Cressbrook, *Holt*. Wormhill, *West*. — *E. Teesdalii* Sm. Chee Dale and Miller's Dale, *Holt*.

Hyocomium flagellare Dicks. On rocks by streams, Kinder Scout, Charlesworth Coombs, and Stenior Clough.

Rhynchostegium tenellum Dicks. Shady wall at Mellor. On shady rocks in the limestone dales.—*R. depressum* Bruch. Matlock Bath and Chee Dale ! Cressbrook, *Holt*. — *R. confertum* Dicks. Frequent on walls throughout the district.—*R. murale* Hedw. On

rocks and walls in the limestone dales. A form near to the var. b. *julaceum* Schpr. occurs near Whaley Bridge and Buxton.—*R. rusci-folium* Neck. On stones in streams. Near Whaley Bridge, Stirrup Wood, Charlesworth, and Mellor.

Plagiothecium latebricola Wils. Charlesworth Coombs !—*P. pul-chellum* Hedw. Miller's Dale, *Holt*. — *P. denticulatum* L. Stirrup Wood, Charlesworth ! — Var. b. *sulcatum* Spruce. Castleton and Miller's Dale. — *P. Borrerianum* Spruce. Common in woods at Charlesworth and other places on the coal measures. Ernicroft Wood, Mellor, *Messrs. Nield & Ashton*.—*P. sylvaticum* L. Wood at Mellor ! — *P. undulatum* L. Common in the hilly districts. Fernilee Wood, near Buxton. Ernicroft Wood, *Buxton*.

Amblystegium confervoides Brid. Cressbrook, *Holt*.—*A. serpens* L. Common. — *A. irriguum* Wils. By a rivulet and by the Goyt at Mellor, *Holt*. — *A. fluviatile* Sw. By the Wye, Chee Dale; by the Derwent, Matlock Bath !—*A. riparium* L. Mellor !

Hypnum exannulatum Gümb. Bogs on Kinder Scout and Charles-worth Coombs.—*H. vernicosum* Lindb. Kinder Scout, *Holt* ! — *H. intermedium* Lindb. Kinder Scout, *Holt* ! — *H. Sendtneri* Schpr. Kinder Scout, *Holt* ! — *H. revolvens* Sw. Kinder Scout ! — *H. fluitans* L. Kinder Scout, Edale, and Axe Edge. — *H. uncinatum* Hedw. Ashwood Dale, Castleton, Charlesworth Coombs, and Stirrup Wood, Charlesworth. — Var. c. *plumosum* Schpr. Miller's Dale, *Holt*.—*H. filicinum* L. Not uncommon on the limestone, as at Castleton and Tideswell. — Var. b. *vallisclausæ* Reid. Miller's Dale, *Holt*.—*H. commutatum* Hedw. Frequent. Kinder Scout and Whitebottom Wood, Charlesworth.—*H. virescens* Boulay. Monsal Dale, *Holt*. — *H. falcatum* Brid. Bog on Kinder Scout ! *H. rugosum* Ehrh. Rather frequent among limestone rubble. Chee Dale, Miller's Dale, and Dove Dale.—*H. incurvatum* Brid. Duke's Drive, Buxton !—*H. cupressiforme* L. Frequent on rocks and walls. On a tree, Stirrup Wood, Charlesworth. — Var. b. *tectorum* Schpr. Ashwood Dale, Chee Dale, Miller's Dale, and Cressbrook.—Var. d. *ericetorum* Br. & Sch. Among heather, Charlesworth Coombs !—*H. resupinatum* Wils. Near Whaley Bridge ! Carmeadow, near Hayfield, *Holt*.—*H. Patientiæ* Lindb. Near Stirrup Wood, Charles-worth. Chelmorton ! — *H. molluscum* Hedw. Rather rare on the millstone grit. Abundant on limestone. — Var. b. *condensatum* Schpr. Kinder Scout, *Holt* !—*H. palustre* L. Chapel-en-le-Frith; Fernilee, near Buxton; Castleton, Miller's Dale, and Mellor.—*H. ochraceum* Turn. Hayfield, *Holt*. Kinder Scout, Stirrup Wood, Charlesworth Coombs. — *H. polymorphum* Hedw. Wall near Ash-ford, *Messrs. Ashton & Nield*. — *H. chrysophyllum* Brid. Miller's Dale, Lathkill Dale, and Castleton. — *H. stellatum* Schreb. Fre-quent on limestone rocks and walls. Rather rare on the coal measures. — Var. b. *protensum* Brid. Miller's Dale, *Holt*. — *H. cuspidatum* L. Common in marshy places. — *H. Schreberi* Ehrh. Charlesworth Coombs, Kinder Scout, and Chee Dale.—*H. purum* L. Rather frequent. — *H. stramineum* Dicks. Charlesworth Coombs and Kinder Scout. — *H. scorpioides* L. Fairbage Moor, near Glos-sop !—*Hylocomium splendens* Dill. Rather plentiful on banks in the

limestone dales. — *H. brevirostrum* Ehrh. Charlesworth Coombs; Chee Dale! — *H. squarrosum* L. Common. Fairbage Moor, near Glossop; Miller's Dale, and Charlesworth Coombs. — Var. b. *calvescens* Wils. Near Whaley Bridge and Mellor! — *H. loreum* L. Charlesworth Coombs and Kinder Scout. Wood near Whaley Bridge.—*H. triquetrum* L. Rather frequent in the limestone dales.

TWO NEW WILLOW-HYBRIDS.

By Edward F. Linton, M.A.

Two willows were collected in 1889 by the Rev. W. R. Linton and myself, which have given some trouble both in their cultivation and diagnosis, but have proved to be interesting and I believe hitherto unnoticed hybrids. One of them (No. 46), from Glen Fiagh, Forfar, was at first supposed by me to be one of the variable forms of *S. Myrsinites* × *nigricans*, and later again to be *S. aurita* × *Myrsinites*, to plants of which, also from Glen Fiagh, it bore a good deal of resemblance. But the softly silky clothing of the leaves reminding one of *S. Lapponum*, besides some other discrepancies, could not be accounted for on either of these hypotheses. I have now no doubt that it originates from a union between *S. Caprea* L. and *S. Myrsinites* L., two species which usually do not grow within range for combining; but the Rev. E. S. Marshall, who sees no objection to my solution, remarks that he has observed *S. Caprea* a little lower down the valley; and I have myself noticed *S. Caprea* near the mouth of the gorge in Glen Doll, which is of course hard by. The hybrid plant was found at some elevation, at the usual level of *S. Myrsinites;* which is therefore probably the female parent. I have another plant from Glen Fiagh, found in 1890, which may be the same hybrid, but being male, it is difficult to make sure of; it also was supposed to be *S. Myrsinites* × *nigricans*, the former species being certainly one of the parents. I give a description of the female plant:—

S. Caprea × Myrsinites, nov. hybr. Bush very small when found, but rising 2–3 ft. (and no doubt higher) in the garden. Leaves 1–2 in. long, obovate-elliptic, rather obscurely crenate, mucronate, very softly pubescent on both sides, densely so while young, somewhat darkened when dried; veins beneath rather dark, tinged with dull purple, finely and distinctly reticulate (giving strong evidence of *Myrsinites*); leaves shining beneath through the hairy clothing. Catkins 1–2 in. long, on short leafy peduncles; ovaries densely covered with silky pubescence, grey-green; scale oblong, very obtuse, blackish at the top, shading through reddish pink to pale green below; pedicels about three times as long as the short, square, truncate, yellowish nectary (or twice in the upper ovaries); style rather short; stigmas large, dividing.

The true solution of this curious blend was missed, because *S. Caprea* does not (like *aurita*) commonly ascend to the *Myrsinites*

level, and was not thought of as a possible factor (though I recollect once finding it at 2500 ft.). The very soft and subentire leaves of the hybrid suggested *S. Lapponum* as a likely constituent,—only to be dismissed on other grounds; but these leaf-characters are well accounted for by the presence of *S. Caprea*, which, though crenate-leaved or crenate-serrate even in the lowlands, has usually *entire* and very velvety leaves at a high altitude. *S. Myrsinites* would be thought by no means obvious in the plant; yet to anyone familiar with the symptoms of its presence in composition it is obvious enough, and I have never doubted its being one of the component parts in this case.

The other willow (No. 49) was gathered on Little Craigindal, S. Aberdeen, and supposed at first to be *S. herbacea* × *Lapponum*. As soon as the plant developed and produced catkins, it became clear that this was not the true solution. *S. herbacea* × *Myrsinites* has also been suggested, with more show of fitness; the more so as the Rev. W. R. Linton has a male plant of this hybrid in cultivation, obtained from the same locality on the same visit. But for No. 49 there are distinct objections to such a theory. While *S. herbacea* is one parent for certain, assuming the plant to be a hybrid, the style, the scale, the nectary, indeed the look of the whole catkin, also the colouring of the leaf on both sides and its serration and clothing, give evidence that is opposed to *S. Myrsinites* having anything to do with it; but every detail fits in with the view I formed a year or two ago, that *S. repens* is the other parent; and many subsequent examinations have strongly confirmed me in this view. Having two or three living plants of *S. herbacea* × *Myrsinites* from different localities, I have been able to compare them from time to time with No. 49, and so work out the differences. For this new willow I propose the name *cernua*, in reference to its habit of keeping low down on the ground; giving it a name in view of the only alternative that I think possible, *viz.*, that it is a new species; as it would have been regarded, not many years back, there being no other species under which it could be ranged as a variety.

S. cernua, n. hybr. vel n. sp. Stems slender, prostrate or creeping; leaves $\frac{1}{3}$–$\frac{2}{3}$ in. long, ovate or broadly or narrowly elliptic, with the tip blunt in the earliest leaves, acute and twisted in the later, more or less *pubescent* on both sides *with appressed hairs* or glabrescent above, green on the upper surface and somewhat shining, *opaque green or glaucous beneath*, serrate or crenate-serrate, the *serrations rather few and distant*. Catkins about $\frac{1}{2}$ in. long, on longer or shorter leafy peduncles; ovaries ovate-conic and grey-green while young, ovate-lanceolate, *rather long* and reddish later, moderately pubescent; scales pale green, concolorous, obovate-oblong or oblong, blunt, somewhat involvent, subglabrous, ciliate; nectaries linear-oblong, at first exceeding and *afterwards much exceeded by the elongating pedicels; styles moderate;* stigmas rather large, dividing.

The italics above draw attention to characters that seem to show modification by *S. repens*. There are one or two other points of the

same tendency, more easily seen than reduced to description on paper, such as the colouring of the upper surface of the leaves, and the look of the twigs and of the small *repens*-like leaves at the base of the twigs; the value of these comes out on comparison with *S. herbacea* × *Myrsinites* and another rather similar hybrid, *Arbuscula* × *herbacea*, at various stages of growth, and has been taken into consideration in determining this willow.

NOTES ON POTAMOGETONS.

By Arthur Bennett, F.L.S.

(Continued from Journ. Bot. 1893, p. 297.)

Potamogeton helodes Dumortier, *Florula Belgica*, p. 163 (1827). When noticing the mode of treating the genus *Potamogeton* by Dr. Richter in his *Pl. Europeæ* (*Journ. Bot.* 1891, p. 75), where he refers the above plant to a var. of *rufescens* Schrad., I made no remark on this; as, although I was aware that many authors referred it to *plantagineus* Du Croz (especially M. Crépin in his *Man. Fl. de Belge*), still I had never seen an authentic specimen, and thought that Dr. Richter might have some special knowledge of the plant. By the kindness of M. Crépin, I now possess an authentic specimen of Dumortier's plant; the plant is undoubtedly a small form of *P. coloratus* Hornm. = *P. plantagineus* Du Croz.

P. mucronatus Schrad. (*Journ. Bot.* 1891, 150). I think the difficulty respecting this plant can now be cleared up satisfactorily. By the kindness of Dr. Schröter, of Zurich, I have had a series of Potamogetons from various herbaria, to look over at my leisure. Among them, in the collection of Dr. Leiner, I find a specimen of *P. Friesii* Rupr., with the following label:—"Aus F. A. Frolich's Herbar. *Potamogeton compressus* L.; Schrad. in litt. L. circa Waltingen Neobovinæ in fluvis Wernif, Jul. 1809, mihi Schrader." This seems to me to dispose of Schrader's claim to the name *mucronatus* as applied to *P. Friesii* Rupr., and to point to Steudel's reference as the true one; i. e., "*P. lucens mucronatus*." It may of course be said—Did Schrader change his opinion as to the Linnean species between 1809 and 1844, the date of the supposed *mucronatus* of Reichenbach? In Reichenbach's herbarium there was a sheet of "*P. compressus* L." (i. e., *P. Friesii* Rupr.), but nothing is noted of *mucronatus* as a synonym, or otherwise. The question is—Where did Steudel get his information? As yet I have come across nothing in reference to *mucronatus*, prior to Steudel and Reichenbach; yet one would think there must be some record somewhere.

Among a series of specimens of Potamogetons sent me by the late M. Maximowicz are specimens of a variety of *pectinatus* that seems deserving of a name.

P. pectinatus L., var. mongolicus mihi. Mongolia occidentalis. Terra Ordos, 1871, leg. Prezewalski; herb. hort. Petrop. — Plant drying a bright grass-green, with pale orange-brown stems and

peduncles. Leaves setaceous, 1-nerved, with transverse veins extending to the leaf-margin. Spikes short, on slender elongated peduncles. Sepals (perianth-segments) large, pale yellowish green, with white edges, reniform-orbicular. Fruit small (half the size of typical *pectinatus*, though scarcely ripe on any specimens seen), pale, with scarcely any trace of ridges. Differs from type in colour, peduncles and spikes more like *filiformis*, the relatively large size of the flowers and small size of the fruit, and habit more like *P. filiformis* Nolte.

P. LONGIFOLIUS Bab. (non Gay); Bab. in *Eng. Bot. Supp.* t. 2847 (1840); *Man. Brit. Bot.* ed. 8, p. 382 (1881); *Journ. Bot.* 1872, p. 229; Hooker & Arnott, *Brit. Fl.* ed. 8, p. 482 (1860); Syme, *Eng. Bot.* ed. 3, vol. ix. p. 40 (1869); Fryer, *Journ. Bot.* 1890, p. 139.—A single specimen, found floating in Lough Corrib, Ireland, by Mr. Ball in 1835, and preserved in Prof. Babington's herbarium at Cambridge.

This specimen has been some trouble to deal with at all satisfactorily. Prof. Babington at first considered it "nearly allied to *P. prælongus*, but (it) has not the amplexicaul and hood-tipped leaves of that plant." In answer to Dr. Boswell's enquiries, Prof. Babington wrote, "Nor is their tip (*i. e.*, the leaves) hooded, as I have always found it to be in true *prælongus*, but terminates in a point, like those of *lucens*." Judging by the *E. B. Supp.* plate, Dr. Boswell thought it might be a form of *prælongus* Wulf.

I possess a specimen of unmistakable *prælongus* from Väne, Denmark, in which the leaves are unusually narrow (*β.* foliis angustioribus, Hooker, *Brit. Fl.* ed. 3, p. 77 (1835) ?), and taper off to a rounded end without any of the usual splitting, or cucullate appearance. Also a specimen from the Jura (Lac du Boula, *Dr. Magnin*), in which the leaves are much like those of the slender branch on Prof. Babington's specimen (not figured in the plate). It was this branch which led me at the first sight of the Cambridge specimen to think of *prælongus*, forgetting, when doing so, Mr. Fryer's remarks (*Journ. Bot.* l. c.). From the appearance of the specimen, I have little doubt it had been floating in the water for some days, and this slender shoot had evidently (certainly in part) been produced while detached; this occurs in *lanceolatus;* I have had it throw out shoots 6 in. long when floating.

The peduncle is certainly a "crux," being characteristic neither of *lucens*, *prælongus*, nor *decipiens;* but I suspect the floating had unduly inflated it in the upper part, and the decay of the flowers had arrested growth beyond the base of the spike. The specimen was probably broken off by some means when nearly past flower, and hence the abortive appearance the spike presents.

On the whole, notwithstanding the *lucens*-like look it presents, I am inclined to think it really may have been a hybrid between *lucens* and *prælongus* (I have specimens of both from the same lake); which indeed Dr. Ascherson (*Fl. Mark Brandenburg*, p. 662 (1864)) considered *P. decipiens* to be; but in this I think he stands alone, and I quite agree with Mr. Fryer that the English Fen plant, as a hybrid, must be *lucens* × *perfoliatus*. Anyhow, the specimen cannot

bear the name of *longifolius*, which is occupied by Gay's plant; and I propose to call it × *Babingtonii* = *lucens* × *prælongus*; for there is no genus which has been more carefully treated in the several editions of the *Manual* than this.

P. prælongus has escaped having many named varieties attached to it; its most remarkable form being *latifolius* "Alpers" in herb. Buchenau, with leaves measuring 3¼ in. long by 1¾ in. wide; and a form from Sweden (Dr. Tiselius) with leaves 12 in. long by ¾ in. wide. The original specimens of Wulfen (gathered in 1763) are about half-way between these two extremes; the narrowest-leaved specimens I have seen were only a bare ⅜ in. wide.

I have cordially to thank Prof. Babington for allowing me the use of the specimen at my leisure.

An expressive name for *P. prælongus* occurs in Host's herbarium! i. e., "*P. elongatum*," but apparently this was never published.

(To be continued.)

ANNE PRATT.

We briefly recorded in this Journal (1893, 288) the death of the lady who was known to several generations of children under the above name, but were then unable to give much information about her. Mr. B. B. Woodward, however, has obtained some particulars of her early life from her niece, Mrs. E. Wells, and a short notice of her work seems desirable.

Anne Pratt was born 5th Dec. 1806, at Stroud, Kent, and was the second daughter of Robert Pratt, a wholesale grocer of that town. A few years later Mr. Pratt removed to Chatham, and in that town Anne lived till 1846. She received her education under Mrs. Roffey, at East Gate House, Rochester, famous in fiction as the scene of Mr. Pickwick's adventure in the girls' school, and also as the "Nun's House" of *Edwin Drood*.

Anne was exceedingly delicate as a child, and her infirmity resulted in a stiff knee, which incapacitated her from all active out-door pursuits. A friend of the family, Dr. Dods, noting her keenness of intellect, offered to superintend her studies in Botany: thus helped she soon became an ardent student, and, aided by her elder sister who undertook the collecting, got together a considerable herbarium. Her artistic skill was turned to account in delineating many of her specimens, and the coloured sketches she made were afterwards frequently employed in illustrating her works.

Her first literary venture, *The Field, the Garden and the Woodland*, was undertaken unknown to any of her relatives, and brought out anonymously in 1838 by Charles Knight. To this succeeded a number of volumes, nearly all connected with British plants, and all marked by more accuracy than is usual in books of the kind. But in the strict sense of the word, Miss Pratt was not a botanist; the introductory portion of her principal work is

singularly meagre and incomplete, and her descriptions show no intimate knowledge of the plants described. She was, however, a true plant-lover, and by her pleasant style succeeded in interesting her readers in the objects she described. Her name does not appear in the Royal Society's *Catalogue of Scientific Papers*.

Many of Miss Pratt's books were published by the S. P. C. K. and R. T. S., and as these religious bodies are notorious offenders in the matter of omitting dates from title-pages it is not easy to say exactly when they appeared. Two very pleasant little volumes —*Wild Flowers of the Year* and *Garden Flowers of the Year*—were issued by the latter Society about 1846. Being anonymous, they do not appear under "Pratt (Anne)" in the British Museum Catalogue, where, however,—such are the inscrutable ways of cataloguers!—one is to be found under "Flowers," the other under "Garden."

Perhaps her most popular work, especially among children, is *Wild Flowers*, issued in two fat little square volumes in 1852 by the S. P. C. K., and frequently reprinted. A boldly-drawn and somewhat coarsely coloured figure, with two pages of popular but not inaccurate letterpress, were devoted to each species selected: and the book has been a pleasant companion on many a summer holiday. The book was also issued in sheets for hanging up in schoolrooms and like places, and certainly fulfilled a useful purpose. Her more ambitious work, *The Flowering Plants of Great Britain*, of which the grasses and sedges and ferns and fern allies formed two separate volumes, appeared in 1855; like *Wild Flowers* it has been often reissued—once in shilling parts—but no attempt was ever made to bring it up to date, although some twelve years since negotiations were opened with a view to this being done. Botanically it is a weak book, but as a popular account of our wild plants it is still the best we have, and the coloured illustrations, in which allied plants are grouped together, are not unpleasing, although not likely to be of use to the critical botanist, having been produced in the days before roses and brambles had strewn his path with thorns. The drawings both in this and the earlier work were, I believe, prepared by Miss Pratt; those in *Wild Flowers* show far greater originality, the *Flowering Plants* being manifestly indebted to *English Botany* in many instances.

On leaving Chatham, Miss Pratt resided for a time at Brixton, and in 1849 went to live at Dover, where she wrote the *Flowering Plants*, already referred to. On the 4th Dec. 1866, she was married to Mr. John Pearless, of East Grinstead, where she resided for two and a half years. After this she and her husband changed their place of abode frequently. I made her personal acquaintance about fourteen or fifteen years since, at Brighton, where she and her husband were then staying. She was a bright intelligent little woman, full of interest in natural history subjects, a certain kindness and simplicity of manner, coupled with much gentleness, reminding me of "Miss Mattie," in *Cranford*. She was evidently much attached to her husband, whose deafness rendered him a somewhat trying companion. After this they went

to live at Redhill, removing two or three years since to Shepherd's Bush, where Mrs. Pearless died on July 27th, 1893.

At one time her literary labours received acknowledgment in the shape of a sum of money from the Civil List. A short sketch, written by Mrs. Wells, with an outline portrait, appears in the *Women's Penny Paper* for 9th Nov. 1889.

JAMES BRITTEN.

ADDITIONS TO THE FLORA OF HEREFORDSHIRE.

BY THE REV. AUGUSTIN LEY, M.A.

MORE than five years have elapsed since the publication, by Rev. W. H. Purchas and myself, of the *Flora of Herefordshire*. During that time a sufficient number of fresh facts bearing upon the vegetation of the county have been observed, to justify their being placed upon record in print. Many of the observations collected are of too purely local interest to bring before the readers of the *Journal of Botany*: but it is thought that the records of species and well-marked varieties additional to the county of Hereford may have a wider interest.

In the following notes the critical genus of *Rubus* has been intentionally put aside, the alterations and additions in this genus being sufficient to require separate treatment. Excluding this genus, it will be seen that fifteen flowering plants, thirty-one mosses, and thirty-nine fungi have been added to the county lists since the opening of 1889—a number quite sufficient to show how far we are yet from finality.

My thanks are especially offered to the Rev. C. H. Binstead, M.A., to whose well-trained eye a large number of the fresh records of mosses is due; and to Dr. M. C. Cooke, who has kindly revised the list of fungi, and to whose diligence and that of his fellow-workers in this field we are indebted for nearly the whole of the additional records of fungi. The numbers placed in brackets refer to the botanical divisions of the county as defined in the *Herefordshire Flora*.

Cerastium arvense L. Native? In a poor hilly pasture, very rare. In a field near Labour-in-vain Farm, in Hope Mansel parish (2), in some quantity, 1892 and subsequent seasons; *Miss E. Gee*! It must remain uncertain for the present whether the plant can be considered native at this station; there is nothing in the situation or circumstances to preclude its being so.

Pyrus intermedia Ehrh.; *Eng. Bot.* ed. 3, Supp. p. 166. Native, in limestone woods, very rare. In the Lord's Wood, Great Doward (2), 1882; *Ley*. Wood at Symond's Yat (2), near the mouth of the tunnel, just within the county, 1894; *Ley*. The Doward specimens were referred by the late Dr. Boswell to *P. Aria* Sm., variety; there can, however, I think, be no doubt that they are *P. intermedia* Ehrh. Judging from Herefordshire, Gloucestershire, Monmouthshire and Breconshire specimens which I have gathered, there can, I think, be no doubt that *P. intermedia* is a native plant.

Hieracium rubicundum F. J. Hanb.; *Journ. Bot.* 1892, p. 208. Native on mountain rocks, rare. On the Red Daren, Hatterel Hills (14); *Ley.*

H. sparsifolium Lindeb. Native on mountain rocks, at one station only. In the Olchon Dingle, Hatterel Hills (14); *Ley.* This plant is referred to in the *Flora of Herefordshire*, p. 526, where the name "*H. gothicum* Fr." must be altered to the present.

Erythræa pulchella Fr. Native, in poor pastures, and by roadsides; rare or very rare. First found in 1889 by myself on a roadside near Dinmore (8), and subsequently in profusion at the same station by Rev. W. H. Purchas and myself in 1891; and in a wood-track in the same neighbourhood in 1892. In pastures on hill-sides above Dulas (13), 1892; pointed out to me by Mr. Cecil Butler.

Lysimachia ciliata L. Alien, of garden origin. Found by Rev. H. T. Williamson! on the river-bank at Bredwardine (13) in 1889. The station is, I believe, in proximity to gardens, and the plant is doubtless an escape from cultivation.

Littorella lacustris L. Native, on the margin of moorland pools; very rare. Discovered in 1889 by Dr. Wood! on Cusop Hill (14). Previously found by the same acute observer in the same neighbourhood, but just within the Breconshire boundary.

Chenopodium Vulvaria L. Once found, and probably a casual. Hop-yard, Colwall (4), 1889; *Miss Raper.* The hop-yard in which the plant grew was unfortunately destroyed in 1890, and the plant has not reappeared since.

Rumex pulcher L. Waste ground and poor pastures, very rare. Native, or introduced with seeds? In some plenty on waste ground near an outhouse, Foy (2), in August, 1889; *Ley.* Probably introduced in this station; still possibly a native plant which had escaped detection.

Aristolochia Clematitis L. Alien; the remains of cultivation? In one spot. Waste ground, in the proximity of gardens at Ross (2), 1891; *Ley.* Already (in 1892) the spot has been built over, and the plant, it is feared, destroyed.

Salix undulata Ehrh. Introduced, in osieries; very rare. Osiery in an old brick-field, Pontrilas (14), September, 1893; *Ley.*

Narthecium Ossifragum Huds. Native, on moorlands; very rare. On the moorland of the Hatterel range of hills at the head of the Olchon Dingle (14), at about 2000 ft., in small quantity, 1889; *Dr. Wood!* This conspicuous and well-known plant must be extremely rare upon the Black Mountain group of hills. It had been sought there in vain for many years, until discovered by Dr. Wood.

Luzula albida DC. Introduced, at two stations. In the grounds at Eywood, Titley (11), in turf; May, 1889, *Dr. Wood!* Sides of a railway-cutting near Titley Junction, in fair abundance, along with *Luzula maxima* DC. and native grasses; August, 1889, *Purchas & Ley.* These two stations lying within a mile of each other, it can hardly fail to suggest itself that the occurrence of this beautiful foreign wood-rush at both in the same year is due to some common cause, but what such cause can be is not clear. Dr. Wood informs me that there was nothing in the station at Eywood to

indicate intentional planting; while as an escape upon railway-sides the plant is very unusual.

Carex curta Good. Native, in bogs; very rare. In a small bog near Titley Junction (11), 1890; *Ley*. Two or three clumps only of this sedge were seen; but the plant was fine and healthy, and there is no apparent danger of the plant being lost in the near future through drainage.

Avena fatua L., var. b. *intermedia*. Scattered through the county, and probably general, but overlooked, and much less abundant than var. a. *pilosissima*. On several of the farms in Sellack Parish (2), 1889; Moraston, Bridstow (2), 1886; *Ley*. Field, Cowleigh Park, North Malvern (4), 1893; near Storridge (5), 1886; *Ley*.

Musci.

Gymnostomum calcareum Nees. Shady limestone and travertine rocks, rare; the fruit very rare; *Journ. Bot.* 1891, p. 331. At two stations on the Great Doward (2); Adam's Rocks, Backbury (3). First found in 1889. Fruiting at the Great Doward in 1892.

Dicranum Scottianum Turn. Conglomerate rocks; very rare. On conglomerate on the north face of Huntsham Hill, 1889; *Ley*. Barren.

Seligeria Doniana Müll. Cavernous limestone, very rare; *Journ. Bot.* 1891, p. 332. Cave, Great Doward (2) in very small quantity, 1890; *Ley*. Sandstone rock in Carey Wood (2), 1893; *Ley*.

S. pusilla B. & S. Shady or cavernous limestone, rare; *Journ. Bot.* 1891, p. 332. On the Great and Little Dowards (2), at several stations. Huntsham Hill (2). First found in 1891.

Dicranum palustre Hedw., var. *juniperifolium*. Rough submoorland ground, rare? Hill pasture, S. Weonards (1), 1880; *Ley*. Rough meadow, Upper Welson, near Eardisley (12), 1893; *Binstead*!

Blindia trichodes Lindb.; Braith. i. 297. On wet mountain rocks. The Red Daren, Hatterel Hills, Herefordshire (14), 1894; *Ley*. First detected by Rev. C. H. Binstead a few miles north of this station, in Breconshire; subsequently also by myself in the Brecon Beacons. It may probably prove not to be infrequent in South Wales.

Fissidens incurvus Schwg., var. *tamarindifolius*. Very rare. On damp clay of a river-bank at Caplar (2), fruiting, April, 1891; *Ley*.

Didymodon flexifolius H. & T. Moorlands and mountain glens, very rare. Cwm Buchel, Llanthony, May, 1887; *Ley*. Omitted by oversight from the *Flora of Herefordshire*.

Leptotrichum flexicaule Hampe, var. *densum*. On limestone *débris*, or bare limestone rock, rare; *Journ. Bot.* 1891, p. 333. Great Doward (2), 1891, *Ley*, but very starved and poor. Common Hill, Fownhope (3), 1893; *Binstead & Ley*.

Trichostomum rubellum C. Müll., var. *dentatum*. On shady limestone. In the gorge of the Teme, Downton (10), 1889; *Ley*. It will probably be detected at other stations.

Tortula convoluta Hedw., var. *sardoa*. On walls and rocks, both of sandstone and limestone, common. Sandstone at Fawley (2);

dry ground at Caplar (2); walls and rocks at Great Doward (2). Walls in the lower part of the Honddu Valley (14). This well-marked variety will probably be found equally common with the type throughout the county. *Journ. Bot.* 1891, p. 333.

T. inclinata Hedw.; Mollia, Braith. i. 251. On a limestone bank; very rare. On the Common Hill, Fownhope (3), 1893; *Rev. C. H. Binstead*! Only detected in minute quantity, but in all probability the true plant.

T. subulata L., var. *subinermis*. Very rare. On a willow bole near Hereford (7), 1889; *Ley*. Growing, at this station, in company with the large river-side state of typical *T. subulata* which is so abundant in such situations in Herefordshire.

T. angustata Wilson; Braith. i. 221. In moorland banks and rocks near streams; very rare. Cwm Buchel, Llanthony, Monmouthshire (14), 1894; *Ley*.

T. Vahliana Schultz. Very rare. On an ant-hill on dry limestone ground, Great Doward (2), 1889; *Ley*. *Journ. Bot.* 1891, p. 333.

Grimmia Schultzii Wils. *G. decipiens* Schultz; Braith. ii. 22. Mountain rocks, very rare. In plenty at the White Rocks, Garway Hill (1), 1893; *Ley*.

G. montana B. & S. Sandstone and limestone rocks, rare and barren. Conglomerate at the Little Doward (2), 1890. Exposed limestone at the Great Doward (2), 1890; *Ley*. Sandstone near Dorstone, in the Golden Valley (13); sandstone near Pont Esgob (14); *Ley*. This moss clearly has a large range in Herefordshire, and will probably be found less rare in the county than might be expected; it is given by Dr. Braithwaite as a rare plant of porphyry and granite rocks. *Journ. Bot.* 1891, p. 334.

G. commutata Hueb. On old stone tile of roofs, rare. Barn-roof, Sellack (2), with fruit, October, 1889; *Ley*. Barn-roof at Eardisley! (12), and at Willersley! 1890; *Rev. C. H. Binstead*. Barn-roof, Vowchurch (13), 1893; *Ley*. Likely to be met with throughout the county on our old stone roofs, but especially on its western and northern sides.

G. leucophæa Grev. On old stone tile of roofs, as *G. commutata*, but more rare. Barn-roof at Eardisley, abundantly, 1890; *Rev. C. H. Binstead*!

Zygodon Stirtoni Schimp. Limestone and sandstone rocks, rare. Sandstone at Huntsham Hill (2), 1891; *Ley*. Limestone at more than one station, Great Doward (2); *Binstead & Ley*. Limestone at Ludford, Ludlow (10), 1883; *Ley*. Fruit not yet detected. *Journ. Bot.* 1891, p. 334.

Z. viridissimus Dicks., var. *rupestris*. Limestone rocks, rare. Limestone of the Great Doward, at several stations; first in 1884; *Ley*. Fruiting, 1891. *Journ. Bot.* 1891, p. 334.

Ulota intermedia Schimp. *Weissia ulophylla* var. *intermedia* Braith. ii. 94. On oak-branches, very rare. In small quantity on rotting branches blown down from oak-trees in a wood near Gipsy Hall, Eardisley (12), 1891; *Rev. C. H. Binstead*.

U. phyllantha Brid. *Weissia*, Braith. ii. 96. On elder boles,

very rare. In very small quantity on elder in a hedge near Pentrejack, Eardisley (12), 1892; *Rev. C. H. Binstead.*

Bryum argenteum L., var. *lanatum.* On a rocky hill-side, at one station only. Western face of the Little Doward Hill (2), on bare rock and earth, 1893; *Ley.*

B. erythrocarpum Schwg. *B. sanguineum* Brid. Bry. Brit. Wooded or heathy banks, very rare. Path-side, Winforton Wood (12), May, 1891; *Rev. C. H. Binstead*! It is with great pleasure that we are enabled, by the acumen of Mr. Binstead, to place this moss definitely in the records of Herefordshire (see *Flora of Herefordshire*, p. 409). The Herefordshire specimens are small and poor, but leave no doubt that the name is accurately given.

Mnium orthorhynchum B. & S. Shady banks, rocks, &c., very rare. On old alder boles near Pont Esgob (14), the male plant, 1890; *Ley.* Growing in company with *M. serratum* and *M. hornum*, but in small quantity. A second search in the same ground in 1891 failed to rediscover the plant.

Atrichum undulatum L., var. *minus.* On the ground in woods, rare? *Journ. Bot.* 1891, p. 336. In the Lord's Wood, Great Doward, abundantly at one or two spots on conglomerate sand, 1890; *Ley.*

Polytrichum gracile Dicks.; Braith. i. 52. Turbaries and moorlands; very rare. Moseley Mere, near Kington (11), in small quantity, May, 1892; *Rev. C. H. Binstead.*

Hedwigia ciliata Dicks., var. *viridis.* On the stone tile of an old roof, Eardisley (12), in abundance, 1890; *Rev. C. H. Binstead*!

Cylindrothecium Montagnei B. & S. Barren calcareous hills; very rare. Near Buckenhill (3), 1893; *Binstead & Ley.*

Plagiothecium latebricola Wils. On decaying stumps in marshes, very rare. On alder boles in the marsh at Pont Esgob (14), abundantly, 1890, 1891; *Ley.* The fruit was not detected.

Fungi.

Agaricus (*Tricholoma*) *panæolus* Fr. Dinmore (8); Whitecliffe (10).—*A.* (*Mycena*) *acicula* Schaeff. Downton (10).—*A.* (*Omphalia*) *fibula* Bull., var. *Swartzii.* Whitecliffe (10).—*A.* (*Omphalia*) *alutaceus* Cke. & Mass. Whitecliffe (10). — *A.* (*Entoloma*) *ameides* B. & Br. Whitecliffe (10). — *A.* (*Eccilia*) *carneo-griseus* B. & Br. Whitecliffe (10). — *A.* (*Pholiota*) *præcox* Pers. Stoke Edith (3).—*A.* (*Hebeloma*) *nauseosus* Cooke. Dinmore (8).—*A.* (*Hebeloma*) *nudipes* Fr. Dinmore (8). — *A.* (*Inocybe*) *descissus* Fr. Whitecliffe (10).—*A.* (*Inocybe*) *muticus* Fr. Dinmore (8). — *A.* (*Naucoria*) *sobrius* Fr. Stoke Edith (3).—*A.* (*Galera*) *mniophyllus* Fr. Stoke Edith (3).—*A.* (*Hypholoma*) *cascus* Fr. Stoke Edith (3). — *A.* (*Stropharia*) *Percevalii* B. & Br. Whitecliffe (10). — *A.* (*Psilocybe*) *sarcocephalus* Fr. Downton (10).—*A.* (*Psathyra*) *semivestitus* B. & Br. Dinmore (8). Downton (10).—*A.* (*Panæolus*) *retirugis* B. Dinmore (8).—*A.* (*Psathyrella*) *trepidus* Fr. Stoke Edith (3).

Cortinarius (*Telamonia*) *brunneus* Fr. Whitecliffe (10). — *C.* (*Telamonia*) *psammocephalus* Bull. Dinmore (8). Whitecliffe (10). —*C.* (*Dermocybe*) *albocyaneus* Fr. Whitecliffe (10).

Lactarius subumbonatus Lind. Dinmore (8).

Russula virescens Fr. Whitecliffe (10). — *R. lutea* Fr. Downton (10).—*R. xerampelina* Fr. Whitecliffe (10).

Boletus candicans Fr. Whitecliffe (10).

Corticium sambuci Fr. Dinmore (8). — *C. epiphyllum* Pers. Downton (10).

Puccinia glechomatis DC. Downton (10). — *P. scorodoniæ* Link. Downton (10).

Morchella Smithiana Cooke. Bridstow (2). — *M. semilibera* Fr. Bridstow (2).

Lachnella nivea Hedw. Downton (10).

Diaporthe inquilina Wallr. On *Umbelliferæ*, Downton (10).

Paxillus alexandri Fr. Whitecliffe (10).

Grandinia ocellata Fr. Downton (10).

Phyllachora angelicæ Fr. Stoke Edith (3).

Empusa muscæ Cohn. On flies, Stoke Edith (3).

WHAT IS THE TRUE RANK OF SALIX SADLERI SYME?

By the Rev. E. S. Marshall, M.A., F.L.S.

Some years ago, in his masterly *Revision of the British Willows*, Dr. Buchanan White gave it as his opinion that this was "a remarkable form of *S. lanata*." I feel sure that anyone who has studied the living plant at all carefully will consider him fully justified in rejecting the theory of a *lanata* × *reticulata* origin. My own observation of its habit and characters when cultivated under varying conditions has, however, led me to a different conclusion, and I now quite believe it to be a hybrid, viz., *herbacea* × *lanata*. The train of thought which has ended thus was started by my finding (July, 1892) in Glen Callater, at the altitude (2700 ft.) given by Sadler for the willow bearing his name, a small, prostrate and rooting shrub which seemed to be evidently a cross between *S. herbacea* and *S. lanata*, although considerably nearer to the first named; in this view Dr. White subsequently acquiesced. No catkins were obtainable, and my cuttings unfortunately died; but there was a great resemblance in habit and in the size of the leaves, though not much similarity in their shape and texture, to the figure of *S. Sadleri*—taken from a wild specimen—in *Trans. Bot. Soc. Edin.* for 1874.

I have seen *S. Sadleri* growing beautifully in my friend Mr. W. Boyd's garden at Faldonside, near Melrose, as well as at Kew. In both cases the leaves have very much increased in size, and tend to become suborbicular. The soil of my own garden (purposely unimproved) being light and sandy, a small cutting which has been planted there for about two years and a half has kept considerably nearer to the original condition. On first expanding, the leaves are densely clothed with the woolly tomentum so characteristic of *lanata*: but this (with me) is very deciduous, so that they eventually

become glabrescent, besides being decidedly thinner than in that species; in fact, at the time of writing these remarks, they approach more closely in appearance to those of *herbacea*, from which, too, their rounded form, greener colour, occasionally crenate-dentate margins, and (as a rule) distinctly cordate base appear to be derived. The reticulation of the under surface, though upon the whole nearer to *lanata*, bears witness to their double ancestry, the young wood and leaf-buds also giving strong evidence of *herbacea*-influence.

For an opportunity of studying fresh catkins I have to thank Mr. Boyd, who most generously forwarded all the available material produced by his bush this season, in capital condition for examining. The characters of these are, I think, pretty much what one would expect to see resulting from the suggested union; the only divergence from the 1874 drawing being in the stigmas, which are somewhat longer than it represents them to be. Both catkins and capsules are only about a third or a fourth of the normal size in *lanata;* the styles being also somewhat shortened, and the scales less densely shaggy with silky hairs. Both plants have glabrous capsules, nor are the styles of *herbacea* usually so short, in Scotland at least, as book-descriptions might lead one to expect.

My consideration of this subject has been much helped by a study of other *herbacea*-hybrids (with *Arbuscula*, *aurita*, *Lapponum*, *Myrsinites*, and *nigricans*), as illustrating the effect produced by that species.

When visiting Dr. White's station for his *S. Stephania*, I believe that I have gathered both forms described by him (*l. c.* pp. 424–6). They differ very considerably from one another and from my Glen Callater *herbacea* × *lanata*, as well as from *S. Sadleri;* still, anyone who has seen much of such polymorphic hybrids as *aurita* × *cinerea* and *aurita* × *repens* will be indisposed to lay great stress upon the amount of divergence.

It appears more likely, on general grounds, and taking into account the proneness of willows to intermix, that *S. Sadleri* should be due to such a cross-fertilisation as is here suggested, than that a true species or variety should be represented by only two individuals in a single station. Here, moreover, is an illustration of the inconvenience of deliberately giving quasi-specific names to plants which are considered to be of hybrid extraction; for *S. Sadleri* Syme and *S. Stephania* B. White are clearly not identical, although, as far as I can judge, they have the same parentage.

A NEW BRITISH RUBUS.

By Edward F. Linton, M.A.

A bramble of the suberect group, allied to *R. plicatus*, *opacus*, *nitidus*, and *affinis*, but not easily subordinated to any one of these, has been gathered in one Irish and four English counties. Twice over it has been referred to *R. opacus* Focke, and issued as such by

the Botanical Exchange Club (*Report*, 1890, 285; and 1892, 361), and given as a new county record for Salop in this Journal (1893, 21). It differs, however, from *R. opacus* not less than from the others above named, and Dr. Focke has now fully admitted its distinctness. I have great pleasure in dedicating it to one who has done more than any other in recent years to elucidate the study of British Rubi, and who has in particular taken much trouble in the working out of this plant as a species.

Rubus Rogersii, n. sp. Stem 3–7 ft., erect or suberect, glabrous, with numerous sessile glands, sulcate while young, eventually plane between the angles; purpurascent in exposure; prickles *numerous*, subpatent or declining, nearly straight (except when young), rather long and strong, subulate from a dilated compressed base, usually confined to the angles. Leaves 5- sometimes 7-nate; petioles plane, pubescent above, with many small strong hooked prickles; leaflets firm, flat, *finely and evenly serrate* with crowded subsimple serrations, *greyish green* with soft dense pubescence *beneath; terminal* cordate-acuminate, *gradually narrowed to a fine point;* basal oblong-obovate acuminate, shortly stalked. Panicle bluntly pyramidal, rather lax, often broad and much branched, *leafy to the top; rachis very flexuous*, more or less hairy armed with many strong prickles declining from a much dilated base or slightly hooked; branches ascending, lower leafy; sepals ovate-deltoid with linear tip, long, green or greyish green and more or less pubescent outside, with a grey tomentose margin, laxly reflexed; petals elliptic, shortly narrowed at the base, pinkish white; *stamens short*, hardly equalling the greenish styles at first, eventually rather longer; fruit with some scattered hairs.

R. Rogersii differs from both *R. plicatus* and *R. opacus* in the more compound prickly and leafy panicle and the reflexed sepals; from the former also in the cordate-acuminate terminal leaflet and greater pubescence of the leaves, and from the latter in the short styles; from *R. affinis* in the shorter prickles usually more dilated at the base, shoots not arching over nor trailing and rooting at the tip, leaves greyer beneath and flatter, and short stamens; from *R. nitidus* in the occasional 7-nate leaves, the shorter and less curved prickles of the rachis, the leafy panicle, reflexed sepals and shorter stamens; and from all four in the very fine and very crowded leaf-serration.

Its distribution is for the present:—(3) S. Devon, *W. M. Rogers;* (27) Norfolk E.; (40) Salop; (57) Derby; and in Ireland, Co. Down, *Hb. W. M. Rogers* (collected by Rev. C. H. Waddell).

SHORT NOTES.

Note on Ipomoea.—In the process of arranging Dr. Welwitsch's fruit collection, some specimens of *Ipomoea* have come to light, which, in view of recent papers in this Journal, seem of sufficient interest for a brief note. The numbers cited are those of his fruit

collection, which are distinct from those of the herbarium. The first, the fruit of *Ipomoea prismatosiphon* Welw., hitherto unknown, may be described as follows:—Capsula pollicaris ovali-oblonga glabra fulvo-brunnea, bilocularis, valvis 4 regulariter dehiscens. Semina 4, inter majora, rubescentia subobovata angulis 3 rotundatis, pilis longis sericeis nitente-flavescentibus dense induta. Pungo Andongo; "161 et 777, in dumetis pr. Luxillo, June 7, 1857"; 786, October, 1857; 787 (without date). The light brown capsules are 1 in. long by 4–5 lines in thickness; on dehiscence the seeds emerge in a mass of pale yellow silk, which is found to be made up of four parts, each completely enclosing a large (4½ lines long) reddish seed; the smooth, thin, silky hairs reach a length of 9–10 lines. The second belongs to *Ipomoea verbascoidea*, and is also now described for the first time, in part from a fruiting specimen in Welwitsch's herbarium (No. 6115), and in part from the detached seeds:—Capsula subrotunda, glabra, brunnea, bilocularis, valvis 4 regulariter dehiscens. Semina brunnea, late-ovalia, lanugine fulva tomentosa dense induta. Welw. Herb. 6115, "In fruticetis inter Mumpulla et Nene. Octob. 1859." Welw. Coll. Carp. 778, "In sylvis inter Mumpulla et S. de Xella. Jun. 1860." The capsule is ⅔ in. long. The light brown seeds (3½ lines long) are enclosed in a thick, matted, tawny covering, resembling balls of wool.—A. B. Rendle.

Sori on barren Frond of Botrychium.—In May, 1893, a member of the Caradoc Field Club sent me some fine specimens of *Botrychium Lunaria*, gathered in a valley on the east side of the Stiperstons Mountain, Shropshire, one of which had been taken up from its position with so much earth around its base that I was tempted to place it in my garden, in the vain hope that it might become naturalised there. It appeared for a month or more to show no signs of drooping; but to my great surprise, after about a fortnight had elapsed, I observed what appeared at first sight a large *Puccinia* on the extreme margin of the barren frond, the receptacles arranged in linear groups, and also isolated. On examining the frond more attentively, I saw that the bodies were globose capsules, some of which were split transversely, exhibiting abundant spores—in fact, true sori. I am not aware whether this has been previously observed.—William Phillips.

Claytonia perfoliata in Shropshire.—Miss Kilvent, of Grinshill, near Shrewsbury, who has paid much attention to the botany of her own neighbourhood, sent me specimens of *Claytonia perfoliata* found in a private drive to a neighbour's house, on ground taken out of a field. It has never been observed there before, and nothing is known of its mode of introduction. My friend the late W. E. Beckwith recorded a similar naturalisation of this plant at Ryton, near Shifnal (*Journ. Bot.* 1881, p. 50).—William Phillips.

New Variety of Hieracium Dovrense Fries.—In July, 1892, when botanizing near the Lochsie Burn, in Glen Shee, E. Perth, I came across a handsome hawkweed of unfamiliar aspect, growing pretty plentifully at about 1250 ft., as a rule in shade. It also occurred sparingly beside the river, about a mile and a half below

the Spittal of Glen Shee. My guess at the time, that it might perhaps be Backhouse's *H. gothicum* var. *latifolium*, proved to be wrong; nor, from a comparison of the living and dried plants, have I been able to follow an acute and experienced friend in placing it under *H. Dewari*, although the two are not far apart. Herr Elfstrand has recently expressed an opinion that this form should be described as a variety under *H. Dovrense* (a species of which I cannot pretend to have any accurate knowledge); accordingly, by Mr. Hanbury's desire, I describe it below. The Messrs. Linton were the first to meet with this plant near Clova, in 1890.

H. Dovrense Fries, var. spectabile, n. var.—*Stem* 1½ to 2½ ft. high, very hairy below, rather floccose and with a few scattered hairs above. *Root-leaves* few, ovate, usually apiculate, narrowed into a short broadly-winged petiole, withering early. *Stem-leaves* semi-amplexicaul, ovate-lanceolate, broader in proportion upwards, lower denticulate, upper more deeply toothed, with about four teeth on each side, glabrous and dull green above, paler beneath, with hairy veins and margins; their midrib white and very strong, the veins deeply impressed. *Inflorescence* subterminal (and axillary in cultivation); heads 3 to 11 in my wild specimens. *Buds* broadly cylindrical just before expanding, subglobose when young; phyllaries remarkably broad, dark, floccose-bordered, sparingly pilose, with a few slightly gland-tipped hairs, inner subacute. *Styles* livid. *Ligules* deciduously pilose-tipped. From the specimen of *H. Dovrense* in my set of Lindeberg's *Exsiccata* the above variety differs considerably in appearance, although their inflorescence is much alike. That has a less robust habit, stem-leaves fewer, radical more persistent and narrower, with a slender petiole about equalling their limb, cauline rather narrowly lanceolate, the lowermost stalked; heads smaller and narrower, not floccose-bordered. The following characters may serve to distinguish it from *H. Dewari*:—Herbage of a less yellow-green hue, radical leaves fewer and less persistent, upper stem-leaves more deeply toothed, veins and midrib stronger, involucres larger, phyllaries broader and more floccose, ligules not so markedly pilose at the tips.—E. S. Marshall.

Erysimum repandum in Cornwall. — This plant I have noticed for at least three years past growing on waste ground near the railway-station, Launceston. This year it seems to be spreading over a much more extended area, and looks as if it had come to stay; perhaps it may be useful to record its appearance. *Lepidium perfoliatum* also, which is growing with it, seems to be establishing itself, but not to the extent of the *Erysimum*.—W. Wise.

Salix viridis Fr. in S. Somerset. — While waiting between trains at Norton Fitzwarren, on April 30th, I noticed two fine male trees of this willow. I believe it has not been recorded before for this vice-county.—Richard F. Towndrow.

Aponogeton distachyon at Hampstead. — Mr. J. E. Whiting informs us that *Aponogeton distachyon* is now flowering in the Leg of Mutton Pond, Hampstead Heath, where he also observed it last year.

NOTICES OF BOOKS.

An Introduction to Structural Botany (Flowering Plants). By D. H. Scott, M.A., &c. London: Adam & Charles Black. 1894. Pp. xii, 288; 113 figs. Price 5s.

Practical Botany for Beginners. By F. O. Bower, F.R.S. London: Macmillan & Co. 1894. Pp. xi, 275; 13 figs. Price 4s. 6d.

In noticing elementary books in these pages, we have lamented nothing more than the want of a book which should do for structural Botany what Prof. Oliver's *Lessons* has long done for the study of the principal natural orders. It seems hard to realise that this grievance is no more, and that we possess in Dr. Scott's volume such a book in our own language, and a book that no honest critic will fail to assess at a higher value than any known book in any language that has the same scope and aim. It has the same excellences as Prof. Oliver's book, and these have been harder of attainment here because the difficulties of making things perfectly plain are greater, since the minuteness of the objects renders ordinary comparisons and verbal illustrations remote. Nothing could well be more plain and simple, or more severely accurate or better judged from beginning to end. The plans of those writers who have hitherto tried to produce an elementary guide to this department of the subject have always been laid with the intention of boiling down some larger Manual, and the result has been a kind of pemmican suited more to the needs of the "crammer" than of the student. In the present case the author has plainly gone to work afresh, and he has produced a book based on his own knowledge, and written clearly expressing his own thoughts and ideas, instead of the second-hand notions derived from other writers. He has taken three types; the Wallflower for Dicotyledons, the White Lily for Monocotyledons, and the Spruce Fir for Gymnosperms; and dealing exhaustively with them, and adducing facts from other plants, has taught his subject in these pages most thoroughly. After dealing with the external characters of the Wallflower, he takes up the internal structure, and the development of its reproductive organs. He then treats the Lily in like fashion, and subsequently gives a chapter on the physiology of nutrition. Finally the Spruce Fir is dealt with as the two other types. It is difficult to select any part for its special excellence, but in reading the book the account of the reproductive organs appeared to be particularly good—probably because this has always been so unsatisfactorily done in other primary books. Otherwise the book is of level merit in all its parts.

The elementary student has only one want to be satisfied—a similar book on well-selected cryptogamic types; and since this volume has "Flowering Plants" in a secondary place in its title, it is to be earnestly hoped that another volume is in contemplation or preparation that will supply this want. This notice would be incomplete without praise of the admirable new illustrations.

It is not too much to say that Prof. Bower's *Practical Botany* has had an unrivalled influence in its department on the teaching

of Botany in this country. It came at the right moment, when a special stimulus was needed to urge both teachers and students into practical study, and to warn them of the disasters that come of mere book knowledge of minute structure. It was impossible to use it as a "cram" book—on every page it reminded its owner of his instruments and subject in a way that permitted of no skipping; it proved an "old man of the sea" to all concerned, and did more, from its very nature, to compelling first-hand study of minute structure than any appeal of author or teacher. It had one fault for the elementary class,—its bulk,—and its author having plainly discerned this, has now brought out an abridged form of it. The book could not have been simplified,—the large edition is plain enough,—and this abridgment was the wiser course. There can be no question of the good that will result from it. This edition goes over the whole ground of the larger one, and contains all the main types; but since the supplementary descriptions of other forms are omitted, the teacher will have to make this good in his lectures in order to guard against the evils of mere type knowledge. The author evidently dreads the narrowing of the scope of teaching that would come of an omission of this supplementary instruction, and wisely inserts a caution that teachers will do well to remember. Botanists must be grateful, above all things, for the thoroughly healthy style of Dr. Scott's and Prof. Bower's methods of teaching elementary Botany as shown in these two books.

G. M.

Das entdeckte Geheimniss der Natur im Bau und in der Befruchtung der Blumen von Christian Konrad Sprengel (1793). Herausgegeben von Paul Knuth. In vier Bändchen. 8vo, pp. 184, 172, 178. Titel-kuper (with explanation of figures), and tabs. 1–25. Leipzig: W. Engelmann. 1894. Price 8 marks.

These four little volumes are Nos. 48–51 of Ostwald's *Klassiker der Exakten Wissenschaften*. When reviewing some months ago in this Journal one of the same series, Kolreuter's researches and observations on the sex of plants, we expressed regret that Sprengel's classical work had not been reissued in a similar form, as a fitting commemoration of its centenary. Mayer and Müller, of Berlin, have since issued a facsimile reprint, and we now possess the present handy little edition by Dr. Knuth. The first three volumes contain the text in which the original paging is indicated, and the index, while the fourth is devoted to the title-page and the twenty-five plates. The latter are reduced, being rather more than half the size of the original copper engravings, with which, though fair reproductions, they naturally compare somewhat unfavourably. Comparison of the text with that of the original shows a few discrepancies in punctuation and some inconsistencies in treatment of old forms of spelling, &c.; if *seyn*, *beym*, *drey*, and the like are kept up, so also should be the separation of compound words. In a brief appendix at the end of each volume the editor includes a few critical notes and references to later work on individual plants studied by Sprengel. He also gives us a very

brief biographical notice, with a short list of similar publications, most of which appeared last year, but does not include one by Mr. J. C. Willis in *Natural Science* for April, 1893. In view of the importance and interest attaching to Sprengel's work, would it not be worth the while of some English publisher to bring out a translation ?

A. B. RENDLE.

Recherches sur l'Anatomie comparée du genre Thunbergia L. fil. Par CHARLES ROULET. Extrait du Bulletin de l'Herbier Boissier. Tome II. Avril et Mai. 1894.

DR. CHARLES ROULET, a pupil of Professor Chodat of Geneva, has examined the structure of all the species of *Thunbergia* of which he was able to get material. Anomalies in the stem-structure of various species of the genus have, indeed, in recent years been described by Russow, Vesque, Radlkofer, and several other authors, but hitherto study in detail from species to species has not been undertaken. Dr. Roulet finds the epiderm cells to be largely collenchymatous, and only to a slight extent cuticularised, and he notices the presence of sclerenchyme fibres in the hypoderm, as well as of lacunæ in the cortex, which latter are, in some species, quite large, and give the cortex the appearance of that of an aquatic plant. There is in all cases a well-differentiated endoderm, and within it a usually 1-layered pericycle, reinforced in places by sclerotic elements. The climbing species present three types of structure, *viz.*:—

i. The *Hexacentris* type, characterised by the indefinite production of alternating xylem bridges and phloem-islands in the interfascicular radii.

ii. Type of *T. elata* and *reticulata*: in stems of this type the phloem-islands first appear in, and are sometimes restricted to, the abaxial side of four narrow fascicular wedges.

iii. This type includes *T. fragrans*, and a few others with small phloem-islands in the xylem, into which latter penetrate wedges of extraxylemic phloem, the cambium-ring being wavy in outline.

Among the erect species, *T. annua* is peculiar, inasmuch as there are a few small phloem-islands immersed in the axial part of its xylem. The other erect species have normal xylem.

Some remarkable anomalies are described. Especially noteworthy is the structure of *T. armipotens* and *huillensis*, these having medullary xylem-islands, and a woody cylinder, which after a time is fragmented just as occurs with the genus *Mendoncia*. *T. Fischeri* is peculiar too, inasmuch as its phloem-islands are restricted to two interfascicular radii on opposite sides of the stem, and these islands may be in contact with the pith.

The author carefully describes the various histological elements, but it must suffice to notice the curious ones discovered by Russow, and called by Radlkofer "raphidines." The development of these is gone into, and they are shown to arise as thickenings of the parent cell's wall which, by dissolution of its mid-lamella, are set

free as a number of raphid-like bodies. Dr. Roulet has succeeded in finding these raphidines in at least one organ of all the species examined by him.

Besides the stems, the roots, petioles, leaves and peduncles have also been sectioned, the upshot being that abnormalities in stem-structure are usually accompanied by peculiarities in the structure of the other organs.

Dr. Roulet then goes on to discuss the classification of the species with reference to their structural peculiarities, and it is interesting to compare his arrangement with that recently published by Dr. Lindau. Both agree in degrading Nees von Esenbeck's *Hexacentris*, Roulet because of the many transitions between the normal *Hexacentris* and other types of structure, and we may remark that the connection is even closer than he admits, since he includes in *Hexacentris T. grandiflora* Roxb. better placed, as by Lindau, among the *Euthunbergias*. Both authors agree in rejecting the nature of the calyx (toothed or truncate) as of sectional value, but from this point onward they frequently diverge; Lindau finds his primary sectional character in the form of the stigma, whether funnel-shaped or bilobed; and though he often places close together species structurally similar, this is by no means always the case. Whether we have in either character a firm basis for the construction of a *pedigree* may well be doubted, for the shape of the stigma is probably correlated with pollination, and abnormalities in stem-structure with climbing habit.

The memoir is lavishly illustrated, there being no less than eighty-five figures interpolated with the text, and we have no hesitation in expressing our belief that this is a solid contribution to our knowledge of the Acanthaceæ. It is to be hoped that in future, with these figures before him, no systematist will describe a *Thunbergia* without at least making a section of the stem and telling us roughly what its structure is. It may be remarked that systematists even now seem hardly alive to the advantage of adopting modern methods of research. A tiny piece of stem or leaf, the taking of which does not in any way spoil a specimen, is sufficient for scores of sections, and when it is remembered that a trained eye can in most cases readily distinguish the slight microscopic differences between allied species, the help afforded by sections becomes at once obvious; indeed, the time cannot be far distant when every sufficient description will be expected to contain at least some reference to minute structure. S. M.

Sur la nécessité d'une nouvelle Monographie des Roses de l'Angleterre. By François Crépin.

Under the above title Professor Crépin has contributed to the *Bulletin* of the Soc. Bot. Belg. (t. xxxiii. pt. 2, pp. 14–25) a paper on the state of the British literature of the genus *Rosa*. He calls attention to the fact that, since the publication of Baker's Monograph in 1870, great strides have been made in the knowledge of the genus and its synonymy, and a number of new forms have been

recognised; and expresses the hope that some English botanist will undertake the preparation of a new monograph brought up to the present level of knowledge. He then gives the following list of the species under which he would group the British forms:—

Sect. i. *Synstylæ.*
R. arvensis Huds.
Sect. ii. *Stylosæ.*
R. stylosa Desv.
Sect. iii. *Caninæ.*
Subsect. *Eu-caninæ.*
R. canina L.
R. obtusifolia Desv. (incl. *R. tomentella* L.).
R. glauca Vill. (incl. *R. coriifolia* Fries).
Subsect. *Rubiginosæ.*
R. rubiginosa L.
R. micrantha Sm.
R. sepium Thuill.
? R. graveolens Gren.
Subsect. *Tomentosæ.*
R. tomentosa Sm.
Subsect. *Villosæ.*
R. mollis Sm.
Sect. iv. *Pimpinellifoliæ.*
R. pimpinellifolia L.

Prof. Crépin considers *R. hibernica*, Sm. and *R. involuta*, Sm. hybrids, and, referring to the list in the *Lond. Cat.*, rejects *R. sylvicola*, *R. collina*, *R. Kosinsciana*, and *R. marginata* as not British, being hybrids between *R. gallica* (which does not occur in Britain) and *R. rubiginosa* and *R. canina*. He points out that even *R. arvensis* has not escaped confusion, its variety *gallicoides* having been included under *R. stylosa*. Attention is drawn to the importance of a completely new census of the geographical distribution of the genus, the account in the *Topog. Bot.* being largely based upon unreliable Floras and Catalogues.

Prof. Crépin then proceeds to give some very useful notes on the various species. Of *R. canina* he says that forms of it are often confounded with *R. glauca*, and in addition to the principal character by which he separates them, *viz.*, the sepals becoming reflexed in fruit, as against the erect persistent sepals in *R. glauca*, he states that the peduncles of *R. glauca* are ordinarily shorter, the flowers are usually of a deep rose-colour, and the bush usually dwarfer. He considers the name *R. obtusifolia* should stand for a subordinate species, including the doubly serrate *R. tomentella*, as well as the simply serrate plant usually known as *obtusifolia*. Under *R. glauca* he states that *R. coriifolia* is the pubescent state, as *R. dumetorum* is of *R. canina*, and he considers that *R. glauca* should be ranked as a subordinate species, and not as a variety of *R. canina*, as most British botanists have regarded it. Under *R. rubiginosa* he points out that *R. permixta*, Déségl., included under this species in *Lond. Cat.*, is undoubtedly a var. of *R. micrantha*. He questions the occurrence in Britain of *R. graveolens*, Gren., which occurs, in the form *R. inodora*, Fries, in Germany and northwards, where it takes the place of *R. sepium*. He considers the present classification of the varieties of *R. tomentosa* unsatisfactory, and discusses the probability of their being grouped under two or more subordinate species, as in the case of *R. canina*. In conclusion, Prof. Crépin expresses his readiness to assist British botanists in the determination of the roses.

The extensive critical knowledge of the genus possessed by Prof. Crépin renders his remarks and suggestions of great value, and his help would be of the utmost service to any botanist undertaking the arduous task of writing a monograph of the British representatives of this difficult genus; but it must not be assumed that a mere collecting of specimens and sending them for determination to a foreign authority, however great, will enable anyone to deal satisfactorily with the subject. In such extremely critical genera the variation is so different in different countries, that it needs a study of many years, and an intimate acquaintance with the living plants throughout the country, to acquire the necessary judgment for such a task.

H. & J. Groves.

ARTICLES IN JOURNALS.

Bot. Centralblatt (No. 23).—H. Klebahn, 'Ueber *Rhytisma acerinum*.'

Bot. Gazette (May 15).—E. J. Hill, '*Quercus Leana*.'—E. W. Olive, 'Histology of *Pontederiaceæ*' (1 plate).—W. A. Setchell, 'Notes on *Ustilagineæ*' (1 plate).—F. C. Newcome, 'Influence of mechanical resistance on life-period of cells.'

Bot. Zeitung (May 16).—P. Kossowitsch, 'Untersuchungen über die Frage der die Algenfreien Stickstoff fixiren.'

Bull. Soc. Bot. France (xli. 3: May)——. Hue, 'Lichens des forêts de Saint-Germain-en-Laye et de Marly.'—B. Martin, '*Scleranthus uncinatus* Schur & *S. polycarpos* L.'—H. de Vilmorin, '*Salpiglossis sinuata* sans corolle.'—A. Chatin, 'Valeur de la localisation des organes.'

Bull. Torrey Bot. Club (May 25).—E. G. Britton, 'Revision of *Physcomitrium*' (7 plates).—C. L. Pollard, '*Cassia* in N. America.'—G. F. Atkinson, 'Revision of linosporous species of N. American graminicolous *Hypocreaceæ*.'—H. Schrenk, 'Teratological Notes' (1 plate).—F. L. Scribner, 'New or noteworthy Grasses.'

Erythea (June).—E. L. Greene, 'Observations on *Compositæ*.'—M. A. Howe, 'Californian Bryophytes' (2 plates).—J. B. Davy, *Diplacus speciosus*, sp. n.—J. G. Lemmon, *Pinus Apacheca*, sp. n. (1 plate).

Gardeners' Chronicle (May 26).—*Myrosma nana* Baker, sp. n.—C. T. Druery, 'An aposporous Hart's-tongue.'—(June 2). *Stenospermatium multiovulatum* N. E. Br., *Megaclinium nummularia* Wendl. & Kränzl., *Bolbophyllum Hookerianum* Wendl. & Kranzl., spp. nn.—(June 9). *Tulipa Sprengeri* Baker, sp. n.

Journal de Botanique (May 16).—N. Patouillard, 'Les Terfèz de la Tunisie.'—J. Vesque, 'La tribu des Clusiées.'

Journ. Linn. Soc. (xxvi, No. 177: June 13).—F. B. Forbes & W. B. Hemsley, 'Index Floræ Sinensis' (*Thymeleæ—Urticaceæ*).

Oestèrr. Bot. Zeitschrift (June).—P. Magnus, 'Wie ist die Pilzgattung *Læstadia* jetzt zu bezeichnen?'—H. Braun, 'Ueber einige kritische Pflanzen der Flora von Niederösterreich.' — F. Kränzlin, 'Orchidaceæ Papuanæ.'— J. Bornmüller, 'Florula insulæ Thasos.' —A. v. Degen, 'Ueber einige orientalische Pflanzenarten.' — J. Freyn, 'Plantæ novæ orientales.' — F. Arnold, 'Lichenologische Fragmente.'

Trans. Linn. Soc. (2nd S. iv. pt. 1: May). — 'The Plants of Milanji, Nyasa-land.'

BOOK-NOTES, NEWS, &c.

In *Flora* (Heft 3, 1894) there is an interesting review by Dr. Stizenberger of the Rev. J. M. Crombie's *British Lichens*. After referring to the unique position of this country among European ones in the matter of excellence of its lichenological literature (Denmark excepted), Stizenberger proceeds to describe the book as an indispensable one for lichenologists in all respects but the minutest anatomical details. The illustrations are commended, with the exception of a few which appear to be on too reduced a scale. "The arrangement of the species within the genera is natural, and in this respect diametrically opposed to Leighton's *Lichen Flora*, in which the foundation of a natural system is spoken of with scorn. The descriptions of families, tribes, genera, species, varieties and forms are thoroughly true, concise, and comprehensive, and scarcely in one of the similar works on lichens hitherto published are the constitution of the layers, the fructifications (spores and spermogonia), their structure and their parts, treated of with such fidelity, minuteness and order as here." The book is further welcomed as a guide to synonymy, and an interpretation especially of Dillenius's plates. The only omission noted is *Stictina intricata* var. *subargyracea* Nyl., which occurs in Ireland. Perhaps the highest compliment that could be paid Mr. Crombie's book is Stizenberger's statement that "for the working out of the still missing volume on lichens in Rabenhorst's *Kryptogamen Flora*, eagerly wished for by every German botanist, Crombie's book forms a most helpful precursor—one that is not to be undervalued, even if the future follower in the steps of the indefatigable Rabenhorst should choose other methods than those hitherto used." The reviewer finally bewails the hair-splitting and "phantastische Flunkereien" that occupy lichenologists, and hopes for better times.

The second issue of the *Journal of the Kew Guild*, the objects and scope of which we detailed last year (p. 186), has made its appearance. The reminiscences of Messrs. J. W. Thomson and T. Meehan contain matters of general interest, although the contents are rightly addressed to the members of the Gild. The literary style is open to considerable improvement, but the Journal as a whole reflects much credit upon its editor, Mr. W. Watson.

The second part of Dr. Trimen's *Flora of Ceylon* brings the enumeration down to the end of *Rubiaceæ*. By a change in the mode of publication, the work will now form four volumes instead of two, as at first contemplated, and will thus be less convenient for field use than might have been wished. We have already expressed our opinion of the admirable manner in which Dr. Trimen is carrying out this important work, and this second instalment confirms us in the view that we have in the *Flora of Ceylon* a new departure in the methods of colonial floras. We hope that nothing will occur to prevent the speedy completion of this excellent undertaking.

The Report for last year of the Epsom College Natural History Society contains a good record of work by the Botanical Section, the Secretary of which until lately was Mr. F. A. Rogers, son of the Rev. W. Moyle Rogers. There is a very full list of plants observed during the year, to which the date of first flowering is in most instances attached.

British botanists will be glad to see that Mr. F. J. Hanbury has resumed the publication of his *British Hieracia*. The new part (vi.) contains plates of *Hieracium Marshalli* (described in this Journal for 1891, p. 271) and two forms of *H. chrysanthum*, which are, like their predecessors, beautifully executed. We defer a lengthier notice of this important monograph until the work is further advanced.

Adolph Leipner, whose death took place at Clifton on April 1st, was born Aug. 13th, 1827, near Dresden. At the age of sixteen he went to a college in Dresden, where he took charge of the Museum; after completing his course there, he taught in a public school, and in 1847 came to England, and settled in Clifton in 1854. In 1862 the Bristol Naturalists' Society was founded, mainly through his influence; he was its Honorary Secretary from the beginning, and retained the post until May, 1893, when he was elected President. Mr. Leipner was connected with the Bristol University College from its foundation, first as Lecturer on Botany and German; subsequently he was made Professor of Botany, which post he retained until shortly before his death. He formed the botanical garden in connection with the College. Mr. Leipner was a very keen microscopist, and was for many years a member of the Bristol Microscopical Society. In 1857 he published in the *Journal of Microscopical Science* (v. 134) an article on the presence of silica in the *Rubiaceæ*, and in 1868 he contributed a paper "On the Mosses of the Bristol District" to the *Proceedings* of the Bristol Natural History Society (iii. 21), in which journal he also published on other subjects.

The number of the *Essex Naturalist* published last month contains an excellent "provisional list of the Marine Algæ of Essex and the adjacent coast" by Mr. E. A. L. Batters.

The notes which should accompany Mr. F. J. Hanbury's List of British Hieracia, issued with this number, are unavoidably deferred until our August issue.

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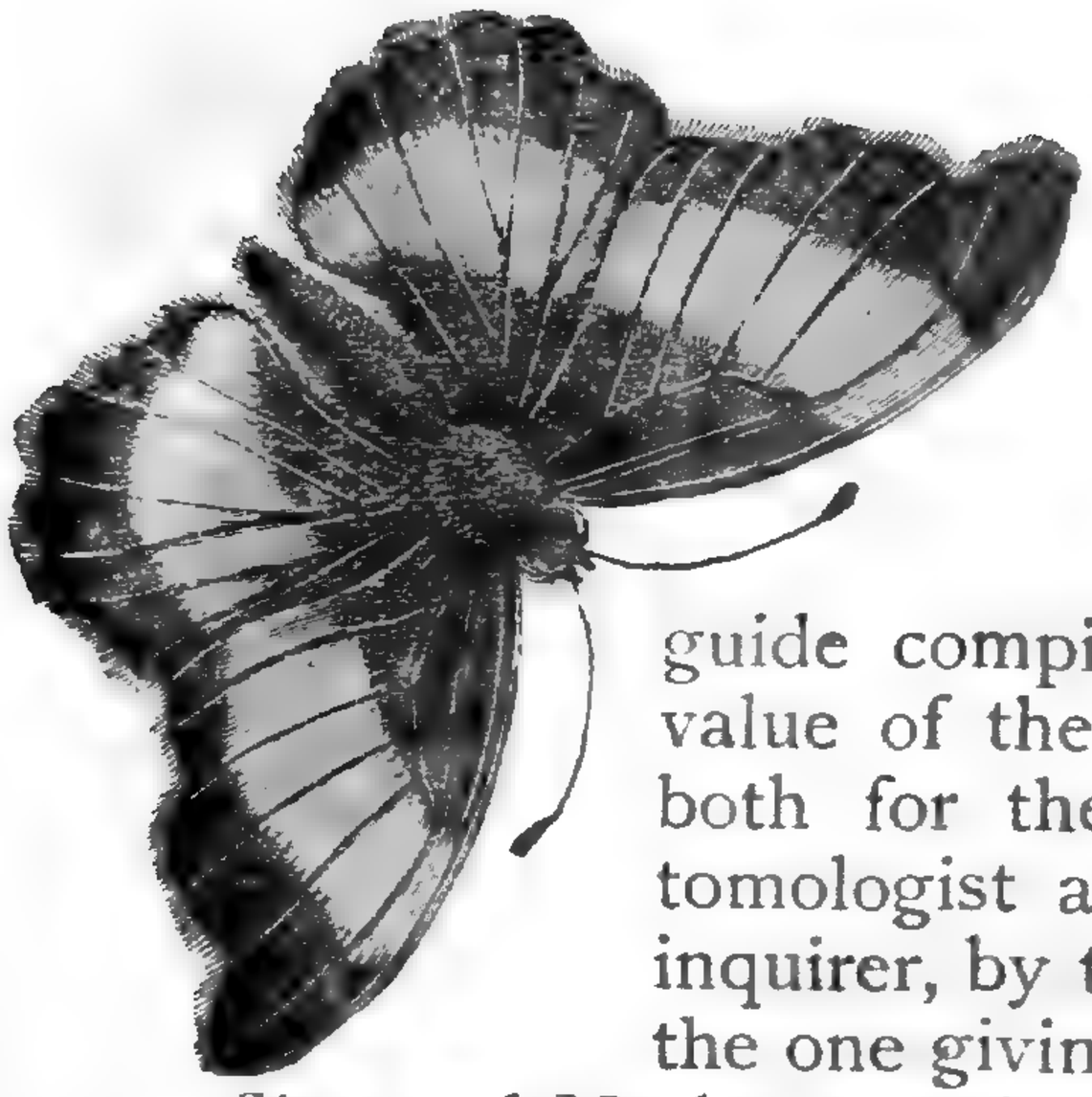

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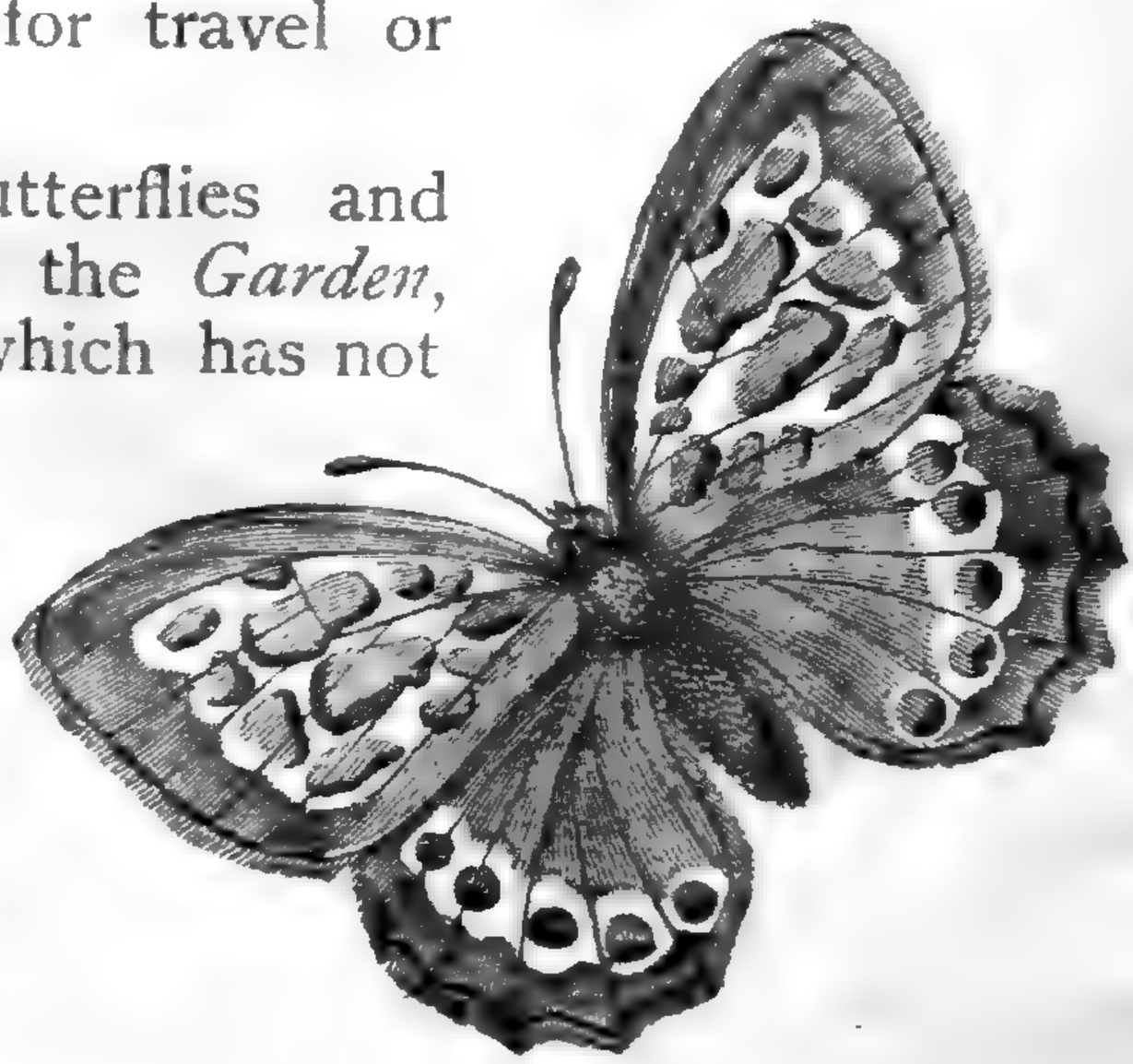

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BIOGRAPHICAL INDEX

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THIS INDEX, which was first published in the 'Journal of Botany,' has elicited general interest. It originated in the supposition that the want of such a reference-list, often felt by the authors, might also be shared by others; and the numerous expressions of interest and approval have fully justified the belief. Numerous additions to the information given in the Journal have been made, and some corrections. The list of names has also been considerably extended.

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NOTES ON BRITISH HIERACIA.

By Frederick J. Hanbury, F.L.S.

The tentative list of British Hieracia issued with the July number, as the title implies, must not be regarded as finally settling questions either of nomenclature or sequence. It is the outcome of an attempt to meet the requests of many friends for a new list embracing the numerous forms recently distinguished or described—one, in short, that will furnish a systematic guide to this portion of their herbaria.

I should have much preferred to leave the subject to be dealt with gradually as my monograph appears. Such a course, however, would be fraught with much inconvenience to others, and, as a new edition of the *London Catalogue* will be needed in the near future, the publication of some such list could not be long delayed. The arrangement, however, of the *London Catalogue* does not permit the publication of a chart showing at a glance the groups, sections, and subsections, into which this genus has with advantage been divided by Fries, whose arrangement is, in the main, here followed.

The present is a favourable opportunity for its publication, inasmuch as I have recently had the benefit of a prolonged visit from Dr. Martin Elfstrand, a well-known authority on the Scandinavian Hieracia, who is thoroughly conversant with the views of Herr Dahlstedt and other Swedish authorities on the genus; and I take this opportunity of acknowledging the great assistance he has rendered not only in identifying many British forms with those already named in Scandinavia, but in helping to remove anomalies that were the cause of much perplexity in the grouping of our species. I have thought it would add to the utility of the list to append a reference to each plant showing where it has been described, or an example issued in a published set of *Exsiccata*. Many of the plants herein given as varieties are regarded in Scandinavia as subspecies. Whilst fully appreciating the prolonged, painstaking, and honest work which seems shortly destined to result in the enumeration of nearly one thousand named forms for North Europe, I feel it necessary to express a grave doubt as to the practical utility of such subdivision, and my fear that the only effect will be to dishearten the student, and render the study of a wonderfully attractive and interesting genus an impossibility, except to the few specialists who may devote their entire lives to its elucidation.

It is not my present intention to describe fully the new species and varieties which appear for the first time in this list, but merely to point out some of the leading features by which they may be distinguished; neither shall I refer to many of those plants which are to be found in published exsiccata or treatises. One or two familiar names have disappeared, and have been replaced by others in cases where the plants differ from the types to which they had at first been referred.

Hieracium petiolatum Elfstrand occurs on the ascent to Ben-

na-muic-dhui from Glen Derry. It is a very distinct plant, which has hitherto been included under *H. gracilentum* Backh., but differs both in the wild and cultivated state from specimens of that species from other parts. It is the form referred to in my *Monograph*, p. 28, as having metallic-looking leaves. A marked feature of this plant in cultivation is a tendency to form a dense mass of knotted rhizomes on the surface of the ground.

H. ATRATUM Fr. f. occurs among the hills of Perthshire, the most characteristic specimens in my possession having been collected on Stuchd-an-Lochain, Perthshire, by the Messrs. Groves, and a slightly different form from Ben Creachan, Argyle, by the Rev. E. S. Marshall.

H. CURVATUM Elfstrand embraces much of what British botanists have hitherto placed under *H. nigrescens*. It differs mainly from the latter in having many long simple hairs on the involucre, true *H. nigrescens* Willd. having setæ only. Plate No. 12 in my monograph represents Elfstrand's species. True *H. nigrescens* occurs on the Breadalbane Hills.

H. cumbriense, n. sp., is the plant I described under letter "a." in *Journ. Bot.* 1893, p. 17, from the English Lake District.

H. HYPARCTICUM Almq. is perhaps the most interesting addition to the British list that I have to record. The species is common in South Greenland, and has now been found in Sweden and N.W. Scotland, forming a connecting link between two continents. It occurs below Ben More of Assynt, where it was gathered by the Rev. E. S. Marshall and myself on July 12th, 1890, and remained among my undetermined forms until recently recognised. Dr. Elfstrand says that our plant differs from Almquist's type in having larger involucres, longer and narrower phyllaries, with shorter setæ, and more entire leaves.

H. CALLISTOPHYLLUM var. CREMNANTHES F. J. Hanb. I have found it necessary to remove this form from the section *Alpina* to the *Cerinthoidea*, the characteristic clothing of the involucre and other features suggesting its present connection, and severance from *H. Marshalli*.

H. CLOVENSE Linton, var. GRIFFITHII, n. var. This is a striking variety, discovered by Mr. J. E. Griffith at Nant Francon, Carnarvonshire, in July, 1893. Though resembling the type in its general habit of growth, the styles are somewhat darkened, the leaves narrower, more gradually tapering into the petiole, and beautifully ciliated with a profusion of stiff curved hairs. The clothing of the involucre is characteristic of the *Cerinthoidea*, though the presence of micro-glands indicates a union with the *Oreadea*. Another plant having pure yellow styles and much less hairy leaves, &c., occurs on the Great Orme's Head, and is best placed, I think, as a variety or form of the same species.

H. Leyi, n. sp. This name I propose to give to a plant already well known to most English botanists, *viz.*, that which has of late years been regarded and circulated as *H. bifidum* Kit. It grows in great profusion on the hills of Carnarvonshire, whence it has been gathered and distributed for many years by the Rev. Augustin Ley,

whose name I am glad to have the opportunity of associating with a *Hieracium* from that part of the country whose flora he has done so much to investigate. The Welsh plant differs from *H. bifidum* Kit., according to Fries (*Epicrisis*, p. 93), in having ciliate ligules, setose involucres, darkened styles, and no stellate hairs beneath the leaves.

H. Carenorum, n. sp. This plant was found by Mr. J. Cosmo Melvill and myself, in 1888, near Cashil Dhu, Sutherland, since when I have had it growing in my garden, where it maintains a very distinctive habit. Stem about a foot high, slightly floccose with few scattered white hairs; peduncles floccose, minutely setose with few scattered hairs. Stem-leaf usually one, almost glabrous above, with stellate down on the under surface, and simple white hairs on the margin and midrib. Radical leaves 6–8 ovate-lanceolate, decurrent at the base, with small acute teeth; clothed with few scattered white hairs above, more on the under side (which is of a lighter colour), especially on the midrib-margin. Petioles rather long, and shaggy with white hairs. Involucres narrow; inner phyllaries pale green, with lighter margins (tips purplish in cultivation); outer appressed, small; all clothed with white black-based hairs, and numerous very minute, long, yellow-headed setæ, the outer and middle phyllaries having floccose margins. Buds long and narrow. Styles yellow. Ligules glabrous at the tips, slightly pilose beneath. The plant does not appear to be known in Scandinavia.

H. Schmidtii Tausch., var. devoniense, n. var., was sent to me from near Countisbury and other localities in North Devon by Mr. W. P. Hiern, in 1889, and from West Gloucester by Dr. W. A. Shoolbred, in 1891. It differs from the type not only in general appearance, but in having narrower phyllaries, which are clothed with finer and more numerous hairs, but are not purplish at the tips.

H. rubicundum F. J. Hanb., var. Boswelli (Linton). Both Dahlstedt and Elfstrand consider that this plant should not be specifically separated from *H. rubicundum*, and in this view the Rev. E. F. Linton (its describer) and I concur.

H. Oreades Fr., var. subglabratum, n. var. Careful examination and comparison with specimens from Scandinavia show that the plant from Caithness which has heretofore been called *H. Oreades* Fr. is a new and distinct variety, differing from the type in having smaller and fewer root-leaves, more setose involucres, and almost glabrous stems. We appear to have this variety only in Britain.

The name H. Lintoni is for the present withdrawn.

H. argenteum Fr., var. septentrionale, n. var. The only specimens I have of this were gathered in the summers of 1887 and 1888, in the extreme north, specially about Betty Hill and the Naver, Sutherlandshire. The clothing of the involucres differs from the type in being more hairy and less setose, the radical leaves are usually more strongly toothed, often broader and of a more upright habit, and closely approach those of *H. nitidum*; in fact, it is difficult in this region to draw a strong boundary line

between the two species, though they are distinct enough in other localities.

H. NITIDUM Backh., var. SILURIENSE, n. var. A form from Cwm Tarrell, Breconshire, collected by the Rev. A. Ley in 1890, differing from typical *nitidum* in having fewer yellow-headed setæ, and more numerous long white black-based hairs on the involucre; the peduncles in the Welsh plant are very floccose with long simple hairs and hardly any setæ, whilst in the type they are floccose, and densely setose with few, if any, simple hairs.

H. SCOTICUM F. J. Hanb., var. OCCIDENTALE, n. var., is the plant referred to under the letter "b." in my paper in *Journ. Bot.* 1893, p. 18.

H. SAXIFRAGUM Fr., var. ORIMELES, n. var., is the plant described under the letter "e." in my paper in *Journ. Bot.* 1893, p. 18. Mons. Arvet-Touvet has seen this plant from Craig Dulyn, Carnarvon, and regards it as a distinct variety of *H. saxifragum* Fr. rather than as a form of *H. buglossoides*, in which opinion Dr. Elfstrand concurs.

H. AGGREGATUM Backh., var. PROLONGATUM, n. var. This I found on the mountains south of Glen Lochay, Perthshire. It differs from the type in having much narrower leaves, and longer and more hairy involucres.

H. RIVALE F. J. Hanb., var. SUBHIRTUM, n. var., found on Clach Leathad, Argyleshire, and on Glen Falloch, Ben Laoigh, Corrie Ardran, Tyndrum, and Allt Dubh Ghalair, Perthshire, by the Rev. E. S. Marshall and myself. Dr. F. B. White has also gathered it by Loch Voil. The involucres are much darker than in the type, having few setæ, little floccose down, and numerous long hairs; whilst in typical *rivale* there are few hairs, rather numerous setæ, and abundant floccose down (especially at the margins of the phyllaries), the stem is more hairy and floccose, and the whole plant much greyer. The species is common and widely spread in the north of Britain, and includes many slightly differing forms which scarcely deserve special designation.

H. MURORUM L. pt., var. CAMPTOPETALUM, n. var., gathered by Mr. J. Cosmo Melvill and myself in two separate localities above the falls of Allt-na-Caillich, Ben Hope, Sutherland, on July 21st, 1888. A curious and interesting form, which I hesitated to name before the whole collection of the *murorum* section had been inspected by a competent Scandinavian authority. Time and cultivation have proved it to be distinct. It belongs to the *pellucidum* group, and is nearly related to *H. munduliforme* Dahlst. Herb. C. I. 53. Its main characteristics are the few, small, dark green, long.petioled, oval radical leaves, armed with minute sharp teeth; stem-leaf, if present, petioled, lanceolate, very acute, irregularly and coarsely dentate; heads few (2–6), borne on spreading and almost straight peduncles; involucres small, compact and very dark with numerous setæ. Ligules short, curled-up and glabrous-tipped. Styles of a dirty dark yellow.

H. EUPREPES F. J. Hanb., var. CLIVICOLUM, n. var. This was found by the Rev. A. Ley, in 1890, on the high cliffs of the Brecon

Beacon. The radical leaves are dull bluish green, rather firm in texture, glabrous above, with long white simple hairs on the margin and under surface. The phyllaries are broad, with stunted black-based hairs and very few setæ, floccose at the tips. Styles pure yellow. Unexpanded ligules very slightly pilose. It differs from the type in having longer peduncles, fewer rather smaller and not adnate heads; the whole plant being less hairy, floccose and setose, and the radical leaves more spreading.

H. rubiginosum, n. sp. I have felt it necessary to dissociate this plant (var. *rubescens* Backh.) from *H. vulgatum* Fr. It differs in having pure yellow styles, much broader phyllaries, which are less floccose, but with longer and more numerous simple hairs; leaves broader, thicker, often blotched with rusty purple, and differently toothed, &c. It remains constant after many years' cultivation. Dr. Elfstrand regarded this as a very good species, which is unknown in Scandinavia. I should have retained *rubescens* for the specific name, had not its use been antedated (*Gilib. Exerc. Bot. Schol. Univ. Viln.* 13, 1772).

H. DUPLICATUM Almq. Dr. Elfstrand so names a plant found by Dr. F. Buchanan White by the Kincraigie Burn, Perth, in July, 1891. It is nearly allied to *H. cuspidatum* Lindeb, *H. Sc. Exs.* 135.

H. ADLERZII Almq. Found by Mr. J. E. Griffith on the banks of the Menai Straits, in July, 1891. It differs from *H. vulgatum* Fr. in having broader hairs, characteristically toothed towards the base, and in its broader phyllaries, which are almost devoid of floccose down.

H. INSULARE F. J. Hanb. This was described by me in *Journ. Bot.* 1892, p. 368, as a variety of *H. cæsium* Fr. Since then Dr, Elfstrand has furnished me with a fine typical series of Fries' plant. He pointed out that this "variety" must be specifically separated from, though it might be placed next to, *H. cæsium*. *H. cæsium* var. *petrocharis* Linton, he considered to be closely associated, if not identical, with my plant. This opinion has been so far confirmed by Dr. Dahlstedt that he told Mr. Linton that his plant must be separated from *cæsium*, and indeed the latter seemed to be of much the same opinion when he wrote in *Journ. Bot.* 1893, p. 180, "It may deserve specific rank."

H. cambricum (Baker), n. sp. Although allied to *H. cæsium* Fr., I feel it necessary to raise this form to specific rank, and in so doing have the approval of all whom I have consulted on the subject. Its small habit, glaucous nature, and other well-known features are all retained after prolonged cultivation.

H. ORARIUM var. FULVUM, n. var. This name I propose for the plant recorded in *Journ. Bot.* 1888, p. 205, which Dr. Lindeberg called *H. orarium* var., giving many reasons why it differed from the type. As the plant was widely circulated through the Botanical Exchange Club by the Rev. W. R. Linton and Mr. J. Cosmo Melvill in 1888 from the east bank of the Naver, Sutherland, where I first gathered in in 1886, I need not enter into a detailed description It is specially characterised by the small reddish yellow flower acutely dentate leaves, and scabrid stems.

H. DURICEPS F. J. Hanb., var. CRAVONIENSE, n. var., is, as the name implies, found in the district of Craven, in the West Riding of Yorkshire. I have gathered the plant in several localities in the neighbourhood of Settle, and on Ingleboro'. Two specimens from Easegill, Lancashire, collected by Mr. Albert Wilson, are better placed here than to any other species. The plant is distinguished by its more numerous cauline and radical leaves, its stylose heads, less setose and more hairy and floccose peduncles, &c. Dr. Elfstrand has gathered this form in Jemtland, but it has never been named.

H. GRAVESTELLUM Dahlst., var. RHOMBOIDES Stenstr., is found on some of the high mountains of Perthshire, Argyle, Aberdeen, Forfar, Sutherland, and on Ingleboro'. Dr. Elfstrand says that "it is nearly allied to *H. cæsium*, but the hairs on the involucre are not so numerous, though finer, darker, and straight; the name is given from the shape of the leaf."

H. DISSIMILE Lindeb., var. POLIÆNUM Dahlst. From the bank of the Strath Burn, near Wick, Caithness, 1887, collected by Mr. W. W. Reeves; from Kingussie, Inverness, 1887, by G. C. Druce: and probably a form from Braemar, Aberdeen, collected by myself in 1887. Closely allied to *H. vulgatum* Fr. The clothing of the involucres consists very largely of floccose down, which is abundant on all the phyllaries, mixed with fine white black-based hairs and few small yellow setæ. The tips of the phyllaries in some of the flowers are dark brown, though generally tending towards a purplish brown.

H. DISSIMILE Lindeb., var. PORRIFENS Almq. Collected by Mr. W. P. Hiern, in 1882, near Watersmeet Countisbury, N. Devon. It may be distinguished from the last by its more numerous stem-leaves, and by the clothing of the involucres; in this case the stellate down is present at the margin of the phyllaries, making each distinct, as well as on the involucre generally; the black-based hairs are missing, and long minute yellow-headed setæ are very numerous. The peduncles are densely floccose and setose, in *poliænum* only floccose.

H. surrejanum, n. sp. A very curious plant found near Witley, Surrey, by the Rev. E. S. Marshall in 1889, of which Dr. Lindeberg wrote, "Hieracio vulgato proximum, at involucro *nudo* foliisque multum diversum." It was not known to Dr. Elfstrand, and may be distinguished from *H. vulgatum* Fr. by its short, broad, and generally blunt-pointed leaves, almost pure yellow styles, broader idvolucres, which are of a different shape, *very sparingly* clothed with black-based hairs, floccose down, and very few setæ. I have not seen this form from elsewhere.

H. SUBRAMOSUM Lönnroth. Collected in 1876 by J. T. Boswell between Burntisland and Pettycree, Fife, and widely distributed by him through the Botanical Exchange Club under the name "*H. pallidum* Fr.?" Radical leaves 2–3, large, ovate-lanceolate, irregularly but deeply toothed, almost glabrous above, with long simple hairs on margin, midrib, and under surface. Stem-leaves 3, 4 or 5 very curiously and acutely toothed, hairy and floccose beneath. Peduncles densely floccose, with simple hairs and few setæ. In-

volucres clothed with somewhat numerous white, curved simple hairs, and very few setæ. It is closely allied to *H. cæsium* and *vulgatum*, but Dr. Elfstrand informs me that it is very distinct when fresh.

H. DIAPHANUM Fr., VAR. STENOLEPIS Lindeb., embraces most of the plants we have hitherto regarded as *H. diaphanoides* Lindeb. True specimens of the latter are in my possession from Welton Valley and Congleton Edge, in Staffordshire. Another form of *H. diaphanum* collected in several Welsh localities by the Rev. A. Ley may eventually prove worthy of special designation.

H. SCIAPHILUM Uechtritz, embraces a large portion of the specimens labelled "*H. vulgatum* Fr." in our herbaria. Its main distinguishing characters are the very setose peduncles, and broad acutely toothed leaves.

H. RIGIDUM Hartm., VAR. NIDENSE, n. var., first gathered by the Rev. A. Ley, in 1890, from "riverside rocks in the Mellte Glen, south Breconshire." This I suggested Mr. Ley should describe. He preferred, however, that it should be included in this paper. It may be recognised by its numerous leaves, all of which, excepting the highest stem-leaves, which are sessile or subsessile and rounded at the base, are long-elliptic, long-petioled, very gradually tapering into the stalk, acutely pointed, and with long acuminate teeth. The buds are cylindrical, and styles slightly darkened.

H. RIGIDUM Hartm., VAR. LONGICILIATUM, n. var. This I first gathered by the Clunie, Braemar, in 1887, and in 1889 the Rev. E. F. Linton again collected it in the same locality. The plant is from 18 to 20 in. high, with long, narrow, lanceolate, acute, dentate cauline leaves, blotched with purple, and having long white hairs on both surfaces and round the margins. Stem, petioles and peduncles all purple, clothed with long white hairs and some floccose down. Involucres dark; inner phyllaries light green, with dark midrib; all brownish purple at the tips, clothed with very minute yellow setæ, a little floccose down, and white black-based hairs.

H. RIGIDUM Hartm., VAR. SERPENTINUM, n. var., gathered by the Rev. A. Ley on rocks, Blaen Taf fawr, Breconshire, in 1888, and on mountain rocks, Hatterels, Herefordshire, in 1886. It is characterised by its very tall stem with long branches and peduncles, its narrow stem-leaves with few teeth far apart, and violet spots on the upper surface; the phyllaries are dark, vary but slightly in breadth, with a little clothing of few simple hairs and minute yellow setæ. The minute setæ show that the form belongs to *rigidum* in a wide sense. The name is suggested by the coloration of the leaves, as also by its habit of growth.

H. RIGIDUM Hartm., VAR. CALCARICOLUM, n. var., collected by the Rev. H. E. Fox, in 1890, on the limestone above Stroud. Distinguished from others of this group by its tall, slender, upright stem with numerous (11–14) very small sharply dentate leaves, by its relatively large heads (frequently solitary, more often 2) and involucres, and by the broad phyllaries, which are clothed with stellate down, few simple hairs, and scattered, very small, yellow setæ (micro-glands).

H. cantianum, n. sp. This plant was found by the Rev. E. S. Marshall in Hangley Woods, near Cranbrook, West Kent, in 1889. I sent it to Dr. Lindeberg four years ago. He wrote:—"Foliorum formâ, dentura vestimentoque (floccoso: tenuo quidem atque inconspicuo, at ubique præsente), etc., tantopere diversum, ut propria species facile habeatur." It differs from any of the forms of *rigida* known to Dr. Elfstrand, and is distinguished by its high stem (29 in.) with numerous (14–17) leaves, which are comparatively short, broad, blunt-pointed, and curiously-toothed; the upper leaves are a little clasping, with broad bases, the lower petioled and decurrent. The involucre is clothed with minute yellow setæ, few simple hairs, and floccose down. The styles are pure yellow.

H. DOVRENSE Fr., var. HETHLANDIÆ, n. var., found by Mr. W. H. Beeby in Shetland in 1891. Dr. Elfstrand remarks:—"It is *dovrense*, and nearer to *dovrense* var. *humidorum* Almq. than any other. It seems to me to differ from typical *humidorum* in the following points. The peduncles are nearly without hairs, the involucres rather larger, the phyllaries broader and more floccose, and, as far as I can see, not violet-coloured at the tips, the stem is a little more floccose, and the leaves not so glabrous."

H. DOVRENSE Fr., var. SPECTABILE Marshall. See *Journ. Bot.* 1894, p. 216.

H. STRICTUM Fr., vars. RETICULATUM and ANGUSTUM (Lindeb.), are now regarded by many Scandinavian botanists as varieties or subspecies of *H. strictum* rather than distinct species, and in this view I fully concur.

H. STRICTUM Fr., var. AMPLIDENTATUM, n. var., is closely allied to the var. *reticulatum*. The phyllaries, however, are much narrower, acute, and with paler green margins, more floccose, and less setose. The leaves, especially above, are floccose. It has been found in Perth and Argyle by the Rev. E. S. Marshall, Dr. F. B. White, and Mr. J. Cosmo Melvill. It is Syme's "*strictum*" from the Crook of Devon, Kinross; and from the shore west of Pegul Burn, Hoy, Orkney, &c.

H. AURATUM Fr., var. THULENSE, n. var. This was found in Shetland by Mr. W. H. Beeby in 1889 and 1891. It differs from the type in its fewer, more equally broad and more clasping stem-leaves, and in its broader and more floccose phyllaries. It is an exceedingly distinct-looking form, though Dr. Elfstrand concurs with me that it may be best treated as a variety of *auratum* Fr.

H. BOREALE Fr., var. CALVATUM, n. var. A high moorland form found by the Rev. A. Ley by the Llwgwy stream, and at Llyn Ogwen, Carnarvonshire. The plant is from 15 in. to 2 ft. high, very glabrous, and in general facies more like *H. gothicum* than *H. boreale*. Leaves few, with a tendency to crowding at the base. Heads few and large; involucres very dark. Dr. Lindeberg wrote on a wild specimen that I sent to him in 1888:—"Forma insignis, species quasi nova, inter *H. Friesii* et *commutatum* media, ab utroque certe distincta." Cultivation, however, in this case clearly shows that it should be treated as a variety only of *H. boreale*.

H. BOREALE × SCIAPHILUM. This plant was gathered on a railway-

bank near Rhayader, Radnorshire, in 1888, by the Rev. A. Ley, and distributed through the Exchange Club without a name. In the summer of 1889 I gathered it from the same locality, when we came to the conclusion that it was a hybrid between the above species. It grew in one large patch consisting of scores of plants, and I have seen nothing like it either from the immediate neighbourhood or elsewhere. Both the supposed parents were growing with it, and flowering at the same time. Dr. Lindeberg thought that it could not be a hybrid for the simple reason that the two species do not flower simultaneously. As a matter of fact, the railway-bank is mown for hay, so that *H. sciaphilum* had been cut down just before blossoming, and had thrown laterals freely, which bore flowers much later in the season than usual. Both Mr. Ley and I are still of opinion that the plant is a hybrid, though I admit the point would be very difficult to prove. In character it is just intermediate.

I have not attempted in these notes to deal with many points, such as the sweeping changes in the section *rigida*. To give reasons and data for all alterations and additions would far exceed the scope of an already very long paper. Such deficiencies are, I trust, partially met by the references appended to each plant in the chart.

I cannot conclude without acknowledging the great assistance I have received in this and other recent work from Miss R. F. Thompson. I have also to thank the Rev. E. F. Linton for communicating certain useful identifications he has recently received from Dr. Dahlstedt, and other correspondents for various notes, information, and specimens.

CONTRIBUTIONS TO THE FLORA OF SOUTH AFRICA.

By Harry Bolus, F.L.S.

I.—ERICACEÆ.

A number of Ericaceous plants which appeared to be new have accumulated in my herbarium, and I had intended describing them all. The appearance of the *Index Kewensis* has revealed the unexpected fact that there are about 105 species there accepted which do not appear in any form in Bentham's Monograph in DC. *Prodromus*, vol. vii; although by far the larger number of these were published prior to 1840, the date of that paper. Species of Linnæus, Berg, Thunberg, Lamarck, and other old authors, besides about thirty species of Tausch in the *Flora* for 1834 and 1839, appear to have escaped Bentham's notice; and there are also some which have been subsequently published. Of many I have no access here at the Cape either to descriptions or specimens. I have therefore confined myself (with one special exception) to species which by the remoteness or the high altitude of their station may be almost safely supposed to be undescribed.

My friend Prof. Guthrie, who has studied this Order, has given me so much kind help that the following pages are really as much his as my own; and it is only by his wish that it takes its present form.

Erica (§ Geissostegia) **Guthriei,** n. sp.—Fruticulus spithamæus vel ultra, ramulis glabris gracilibus adscendentibus; folia 3na linearia glabra lævia subnitida, juniora viscosa, erecta appressa, 2–3 mill. longa; flores 3ni, brevissime pedicellati; bracteæ approximatæ ovatæ coloratæ minimæ; sepala late ovata obovatave obtusa, apice carinata, viscosa, 1·5 mill. longa; corolla oblato-sphæroidea, demum a medio depresso-inflexa, subviscosa, limbo minimo, ore contracto, circa 3 mill. longa; filamenta complanata, antheris exsertis subterminalibus conniventibus; ovarium glabrum, stylo filiformi antheras superante, stigmate capitato.

Hab: Cape Colony, South-western Region, on the sides of the Piquetberg Mt., alt. about 470 meters, fl. Oct., *F. Guthrie* (No. 2659).

Flowers rosy red. Well distinguished by the shape of the small corolla, which becomes much depressed in the centre by the collapse of its upper half, forming a cup from which emerge the stamens and style. In this respect it approaches *E. Marlothii* (see below) but is utterly different in habit, and *E. tiaræflora*, Andr., which has a widely different calyx. The leaves are shining, giving the plant a varnished appearance. For the size of the plant the branchlets are rather unusually slender.

Erica (§ Euryloma) **Junonia,** n. sp. — Fruticulus ramosus rigidus glaber pedalis vel ultra, ramulis dense foliatis; folia 3na linearia, dorso sulcata, imbricata erecto-patentia, 6–7 mill. longa; umbellæ 4–6 fl., pedicellis 8–14 mill. longis, bracteis linearibus remotis; sepala lineari-lanceolata acuminata colorata viridi-nervata, 9–11 mill. longa; corollæ tubus basi ovoideo-inflatus, sursum longe attenuatus, sub limbo paullo ampliatus, subviscosus, lineis rubris 8 notatis, 3·5–4 cm. longus, limbi laciniis patentibus ovatis acutis vel lanceolato-acuminatis, 6–10 mill. longis; antheræ oblongæ aristatæ pallidæ; ovarium anguste ellipticum stipitatum glabrum, stylo tenui staminibus subæquilongo, stigmate parvo capitato.

Hab: Cape Colony, South-western Region, on the rocky Skurfdeberg Mts. near Ceres, alt. about 1600 meters, fl. Dec., coll. *A. Bodkin* (No. 1309 in Herb. Norm. Austr.-Afr., erroneously distributed as "*E.* (*Callista*) *jasminiflora*, Andr.").

A very striking plant, with the largest and handsomest flowers of any *Erica* I have seen. The corolla is bright red, paler towards the base. The nearest of the many figures of *Erica* of this section quoted by Bentham from the *Bot. Mag.* and *Andrews' Heathery*, is *E. Shannoniana*, Andr. t. 239. Our species differs from this by the longer corolla, its much slenderer tube, longer and sharper segments of the limb, its aristate anthers, and different leaves.

The following new section of the genus *Erica* is suggested by Mr. Guthrie for the two species undermentioned already published, which do not fit into any of the existing sections. The discovery of new forms, especially in a region little explored at the period of Bentham's masterly monograph, may well necessitate new groups for their reception, and the genus is already so large and difficult for students that it seems inexpedient to describe new species without indicating their systematic position, so far as this is possible.

Section xxvii *b*. — Apoecus. Inflorescentia terminalis, floribus 4nis pedicellatis. Bracteæ parvæ remotæ vel subapproximatæ. Sepala appressa corollam æquantia vel parum breviora lata colorata scariosa, marginibus in flore aperto imbricantibus. Corolla breviter tubulosa vel oblongo-campanulata, limbo erecto parum expanso. Antheræ inclusæ vel subexsertæ, aristatæ vel cristatæ. Ovarium glabrum. Folia 4na rigida sæpius dense imbricantia. Sectio hinc Eurystegiæ hinc Trigemmæ affinis, ab illa præsertim corollæ forma, ab hac corollæ forma et foliis semper 4nis differt.—Species Capenses, montium Regionis Orientalis incolæ.

Erica (§ Apoecus) caffrorum, Bolus, in *Journ. Linn. Soc.* (*Bot.*) vol. xxiv, p. 184. Huc referendæ sunt: *Tyson*, No. 1194 ("in summo monte Currie Griqualand Orientalis, 7500 ped., Febr."); *Wood*, No. 3519 ("Natal, foot of Drakensberg, 4000 ft., Jan.")

Erica (§ Apoecus) Brownleeæ, Bolus, *loc. cit.*, p. 185. — Huc addenda, *Sim*, No. 102.

Erica (§ Trigemma) gnaphalodes, Thunb.—Syn. *E. tetrastigmata*, Bolus, in *Journ. Linn. Soc.* (*Bot.*) vol. xxiv, p. 178. At the time of publication I was unacquainted with the first named, and the remarkable cruciform stigma is not mentioned either by Thunberg or Bentham.

Erica (§ Pachysa) **Schlechteri**, n. sp.—Fruticulus 2–3 pedalis; ramuli graciles glabrescentes; folia 4na imbricata erecto-patentia linearia, dorso sulcata, glabra vel juniora subviscosa, subglanduloso-ciliata, 3–4 mill. longa; flores terminales, sæpius 4ni cernui viscosi; pedicelli viscoso-pubescentes, 4 mill. longi; bracteæ approximatæ lineares ciliolatæ coloratæ; sepala parva lanceolata obtusa glabra colorata, 3 mill. longa; corolla urceolato-campanulata, fauce contracta, 5 mill. longa; limbi laciniis late rotundatis; filamenta lata linearia complanata incurva, stylo breviora, corollæ dimidium attingentia, antheris inclusis oblongis obtusis cristatis; ovarium villosum, stylo incluso, stigmate capitato.

Hab: Natal, on the banks of the Mooi River, alt. about 1815 meters, fl. Sept., *R. Schlechter* (No. 3341)

Mr. Schlechter informs me that this little shrub was found growing almost in the water and overhanging the stream; the flowers were pale pink. With the general appearance of *E. mucosa*, Linn., the species is quite distinct by its smaller sepals, larger and more campanulate corolla, and its villous ovary.

Erica (§ Pachysa) **frigida**, n. sp.—Fruticulus spithamæus decumbens; ramuli graciles laxe patentes tenuiter pilosi; folia 4na elliptica echinulato-glandulosa subrecurvo-patentia, 2–3 mill. longa; flores terminales sub-4ni, patentes vel deflexi; pedicelli 2 mill. longi bracteis subapproximatis, 2 linearibus coloratis, 1 inferiori foliacea ovata, omnibus glanduloso-ciliatis minimis; sepala ovato-lanceolata viscosa colorato, 1·5 mill. longa; corolla urceolata viscosa glabra, 3–3·5 mill. longa, limbo brevi minutissime lacerato; filamenta anguste linearia complanata, antheris inclusis oblongis aristatis; ovarium breve cylindricum villosum, stylo incluso brevi clavato, stigmate tenui.

Hab: Orange Free State, summit of the Mont aux Sources, alt. about 2900 meters, fl. Dec.–Jan., *H. G. Flanagan* (No. 2029); Cape Colony, Griqualand East, summit of Mount Currie, alt. about 2300 meters, fl. May, *W. Tyson* (No. 1255), and fl. Febr., *ibid.* (No. 1771)

Flowers red. This comes nearest to *E. nitida*, Andr., but with a different habit; the flowers are smaller even than in the var. *parviflora*, Klotzsch, of that species, and the leaves are 4nate, besides other differences.

Erica (§ Pachysa) **Fairii, n. sp.** — Fruticulus pedalis glaber ramosus, ramis validis cum ramulis dense foliatis adscendentibus; folia 4–6na, sæpius 5na, oblonga obtusa crassa dorso sulcata, recurvo-patentia, marginibus scariosis denticulatis, 5 mill. longa; floralia ampliora obovata, cum bracteis sepalis corollisque viscosissima; flores terminales 4ni sessiles subcernui; bracteæ foliaceæ oblongæ obovatæve arcte approximatæ, 6 mill. longæ; sepala linearia acuta viridia submembranacea, marginibus glandulosus, 5 mill. longis; corolla urceolata, 7–9 mill. longa, limbo brevi ovato acuto erecto patente marginibus erosulis; stamina inclusa, filamentis complanatis, antheris oblongis, poro magno longitudine fere loculi, scabriusculis breviter aristatis; ovarium oblongum glabrum, stylo demum exserto, stigmate capitato.

Hab: Cape Colony, South-western Region, rocky mountain ridges near Simon's Town, alt. 250 met., fl. June, *C. B. Fair* (No. 7194 in my herb.; No. 1308, Herb. Norm. Aust.-Afr.).

Flowers pure white. A very distinct species, for which we are indebted to my friend Mr. C. B. Fair. It is certainly not in Bentham's Monogr.; yet I should have refrained from describing it at present on account of its having been found at no very great distance from Cape Town, and of my inability to compare it with the older species enumerated in the *Index Kewensis* which are unknown to me, if it were not that it has been already somewhat largely distributed some time ago under the present name. Although sent out under the section *Callista* it belongs rather to *Pachysa* by its habit and its very viscid corolla. The large pore of the anther also separates it from the former section. In appearance it re-resembles *E. reflexa*, Andr., but differs by leaves, inflorescence, and especially by its much larger bracts and glabrous ovary.

Erica (§ Pachysa) **nubigena,** n. sp.—Fruticulus erectus robustus ramosus; folia 3–4na, oblonga vel oblongo-ovata subobtusa, margine cartilagineo-denticulata ciliatave, juniora apice nigro-apiculata, dorso sulcata, viscosa nitida, circa 4 mill. longa, longiuscule petiolata; flores 3ni terminales, pedicellis 1·2 cm. longis, bracteis linearibus remotis; sepala lanceolata colorata viscosa glanduloso-ciliata, 4 mill. longa; corolla lato-urceolata viscosa, 7 mill. longa, limbo brevi rotundato patente; stamina inclusa, filamentis basi complanatis sursum attenuatis, antheris oblongis glabris subulato-aristatis; ovarium oblongum, 8-sulcatum velutinum, apice villosum, stylo tenui incluso, stigmate capitato.

Hab: Cape Colony, South-western Region, amongst rocks on the Great Winterhoek Mt. near Tulbagh, alt. about 1900 meters, fl. Jan., *Dr. R. Marloth* (No. 1630).

This species is allied to *E. physodes*, Linn. and to *E. ardens*, Andr., but may be readily distinguished from either by the much longer pedicels of the flowers, besides other characters. The colour of the flowers is described on the collector's ticket as rosy.

Erica (? § Gypsocallis) **Woodii**, n. sp. — Fruticulus erectus ramosus pedalis vel ultra; rami subvirgati pubescenti-hirti; folia 3na ovato-lanceolata vel oblongo-lanceolata subplana hispido-ciliata, marginibus revolutis, erecto-patentia squarrosave, 3–4 mill. longa; flores axillares, solitarii, ad apices ramorum racemosi, pedicellis corollæ vix æquilongis, bracteis remotis parvis subsetaceis hispidis; corolla globoso-campanulata glabra, 1–1·5 mill. longa, limbi laciniis rotundatis acutis tubo fere æquilongis; sepala linearia apice paullo ampliata acuta glanduloso-ciliata, corolla parum breviora; stamina subexserta, vel sæpe corollæ æquilonga, antheris ovatis, poro majusculo, aristatis, aristis subulatis laceratis longiusculis; ovarium globosum, apice hispidum, stylo brevi exserto, stigmate majusculo capitato.

Hab: Natal, edge of streamlet, Little Noodsberg, alt. about 900 meters, fl. April, *J. M. Wood* (No. 4136); Trans Vaal Republic, grassy places, Houtboschberg, alt. 2150 met., fl. March, *R. Schlechter* (No. 4749).

Flowers according to Wood "white"; Schlechter's specimens show flesh-coloured. The broadish flat leaves (like those of § *Ceramia*) and the only slightly exserted stamens, are very unusual in § *Gypsocallis*. But the lateral inflorescence separates it more strongly from § *Ceramia*. From § *Chlorocodon* it diverges by its capitate not peltate stigma. I should place it next to *E. fucata*, Klotzsch. It has somewhat the general appearance of *E. hispidula*, L.

Erica (§ Ceramia) **Marlothii**, n. sp.—Fruticulus humilis diffuse ramosus; ramuli graciles puberuli; folia 3na ovata, marginibus revolutis, pubescentia, erecto-patentia squarrosave, 2 mill. longa; flores terminales solitarii (an semper ?) pedicellis gracilibus, 2 mill. longis, bracteis remotis minimis; sepala late ovata villosa, 1·5 mill. longa; corolla in alabastro ovata erecta, demum semi-globosa vel depresso-globosa, nempe dimidio superiore collapso cyathi instar, scaberulo-hirta, basi fossis 4 exsculptis, diametro transversali, 4 mill., limbi segmentis brevibus erectis genitalia arcte amplectentibus; stamina exserta, filamentis erectis, antheris subterminalibus muticis, loculis alte bifidis linearibus; ovarium breve depressum 4 lobum villosum; stylo valido, sursum tenuiter hispido uncinato-decurvo, stigmate capitato.

Hab: Cape Colony, South-western Region, on the rocky sides of the Matroosberg near the Hex River, alt. about 1550 meters, fl. Aug.–Oct., *Dr. R. Marloth* (No. 1956).

A well-marked species. The solitary light-red flowers are unusual in the section, and may not be constant, the specimens being in poor condition. The corolla is strikingly similar in shape to that of *E. Guthriei*, mihi (see p. 234), but the habit and leaves are very different, and that has strictly terminal anthers. The anthers in this are only subterminal, a character which occurs in other species of *Ceramia*, and the plant, though with so different a corolla, has

all the habit of the last-named section. In whatever section, as at present defined, it be placed it will exhibit anomalous characters; but least in *Ceramia*, as it appears to me, and I leave it there for the present.

Erica (§ EPHEBUS) **Flanagani**, n. sp.—Fruticulus robustus, 2–3 pedalis, ramis ad 6 mill. diametientibus; ramulis pubescentibus; folia 4na dense imbricantia suberecta linearia glabra sulcata, 8–10 mill. longa, petiolo longiusculo pallidiori; flores 4ni, subcernui, pedicellis crassis, 4 mill. longis, bracteis linearibus approximatis pubescentibus, sepalis fere æquilongis; sepala e basi latiori linearia pubescentia pallida, 5–6 mill. longa; corolla ovato-urceolata pubescens tubo 7 mill. longo, limbo erecto segmentis rotundatis 2 mill. longis; filamenta complanata, antheris inclusis sublinearibus cristato-aristatis; ovarium breve cylindricum pubescens, stylo crasso incluso, stigmate tenui.

HAB: Orange Free State, on the landward slopes of the Mont aux Sources above the Eland's River Valley, at about 2450 meters, fl. Dec.–Jan., *H. G. Flanagan* (No. 2031).

A very distinct species of robust habit, somewhat resembling in appearance *E. triflora*, L., but with flowers 2–3 times larger. There is nothing like it in § *Ephebus;* the very thick style is remarkable. The flowers are white.

Erica (§ EPHEBUS) **algida**, n. sp.—Fruticulus pedalis vel ultra; ramuli erecti rigidi pubescentes; folia 4na linearia incurva imbricata, juniora echinulato-villosa demum glabrescentia, 3–4 mill. longa; flores sub-4ni, pedicellis decurvis villosis 2–3 mill. longis; bracteæ approximatæ lanceolatæ villosæ viscosæ; sepala ovata obtusa villosa viscosa glanduloso-ciliata, corolla duplo breviora; corolla campanulata pubescens subviscosa, limbo amplo parum incurvo, 3·5 mill. longa; filamenta anguste linearia complanata, ovario paullo longiora, antheris inclusis subterminalibus scabriusculis cristato-aristatis; ovarium dense albo-tomentosum, stylo incluso brevi, stigmate capitato majusculo.

HAB: Orange Free State, on the higher landward slopes of the Mont aux Sources, above the Eland's River Valley, at about 2450 meters alt., fl. Dec.–Jan., *H. G. Flanagan* (No. 2030). This appears to come nearest to *E. albescens*, Klotzsch, but is distinct in habit, and by the characters noted above. The flowers are dull purple.

Erica (§ EPHEBUS) **oresigena**, n. sp.—Fruticulus erectus ramosus rigidus totus cano-pubescens; rami adscendentes; folia 4na, anguste obovata vel linearia obtusa crassa cano-puberula; juniora breviter glanduloso-ciliata, dorso sulcata, erecto-patentia, internodiis longiora, 5–6 mill. longa; flores terminales 4ni, pedicellis glanduloso-hirtis, 9 mill. longis, bracteis foliaceis remotis; sepala linearioblonga tomentosa glanduloso-ciliata, apice incrassata viridi-carinataque, 3–5 mill. longa; corolla urceolata cano-puberula, 7 mill. longa, limbo brevi patente; stamina inclusa, antheris oblongis pallide cristatis; ovarium turbinatum, apice tenuiter hispidum, stylo recto incluso, stigmate capitato.

HAB: Cape Colony, South-western Region, amongst rocks near

the top of the Winterhoek Mt., alt. about 1700 meters, fl. Jan., *Dr. R. Marloth* (No. 1645); on the Matroosberg, near Hex River, alt. 1600 meters, fl. May, *ibid.* (No. 1960).

This species has something of the habit and general appearance of *E. pubescens*, Linn. (*E. pallida*, Salisb., in Bentham's Monogr. in DC. Prodr. vii. p. 673), but the white flowers are much larger besides other differences. I describe from the specimens from the first-named station; of the others I have only seen a frustule with imperfect flowers and have not examined it. It is, however, doubtless the same.

Erica (§ Orophanes) aspalathifolia, Bolus, in *Journ. Linn. Soc.* (*Bot.*) vol. xxiv, p. 182.—This species was proposed by me under the section *Ephebus*. I am indebted to Mr. Guthrie for pointing out to me that its resemblance to that group is superficial, and that it may be placed more naturally in *Orophanes*.

Erica (§ Chlorocodon) **maesta**, n. sp.—Frutex bimetralis; rami adscendentes subvirgati, ramulis pubescentibus; folia 3na, linearia, dorso sulcata cinereo-pubescentia piloso-ciliata, erecto-patentia subimbricantia, 2–4 mill. longa; flores axillares bini vel solitarii, pedicellis pubescentibus 1·5 mill. longis, medio bracteis linearibus minimis donatis; sepala ovato-lanceolata villosa, corolla duplo breviora; corolla campanulata, limbo amplo rotundato, subglabra, 1–1·5 mill. longa; filamenta filiformia, antheris ovatis muticis inclusis; ovarium sphæroideum, pilis paucis apicem versus, stylus tenuis, stigmate magno cyathiformi exserto.

Hab: Cape Colony, near Graaff Reinet, on the Oudeberg Mt., at about 1550 meters alt., fl. Nov., *H. Bolus* (No. 628).

A strong growing shrub with ashy-grey leaves, and dull yellow flowers. There is a plant of Cooper's (No. 760) in herb. Kew, from Basutoland, which has flowers about one-half larger than in my specimens, but is in almost every other respect the same, and is I believe merely another form. I describe, however, from my own specimens.

Blaeria flava, n. sp.—Fruticulus spithamæus ramosus; ramulis glabris; folia 3na oblonga vel oblongo-ovata glabra erecta, internodiis vix longiora, 2 mill. longa; flores terminales umbellati, pedicellis gracilibus, 2 mill. longis, bracteis minimis remotis; sepala lanceolata, apicem versus carinata, vix 2 mill. longa; corolla tubuloso-campanulata subtetragona velutina, 2·5 mill. longa, limbo brevi amplo erecto; antheræ subexsertæ cuneatæ scaberulæ muticæ; ovarium glabrum, stylo exserto, stigmate tenui.

Hab: Cape Colony, South-western Region, on the slopes of the Zwarteberg near Caledon, alt. about 800 meters, fl. Jan., *Bolus* (No. 5147; distrib. Herb. Norm. Aust.-Afr. No. 611).

This comes between *B. campanulata*, Benth., and *B. flexuosa*, Benth. The flowers are pale yellow, and I believe this is the only *Blæria* known to have flowers of this colour; since, however, the flowers in these specimens become dark in drying and even appear somewhat red, it is possible that others known only from dried specimens may also have yellow flowers.

Eremia rhodopis, n. sp.—Fruticulus spithamæus; ramuli

graciles glabrescentes subangulati; folia 3na linearia glabra erecto-appressa, internodiis subbreviora, 3 mill. longa; flores terminales vel laterales, sub-3ni cernui, pedicellis gracillimis, 1·5 mill. longis, bracteæ minutæ remotæ; sepala parva ovato-lanceolata obtusa glabra, corolla 4plo breviora; corolla ovata glabra sicca, 4–4·5 mill. longa; limbo parvo erecto (vel interdum patente?); stamina 8 inclusa, filamentis filiformibus, antheris subovatis aristatis; ovarium stipitatum globosum, 4-loculare, loculis 1-ovulatis, stylo basi crasso sursum attenuato, stigmate tenui.

Hab: Cape Colony, South-western Region, Houw Hoek Mt., Febr., *Pappe?* (No. 36 & 128); same locality at about 280 meters alt., April, *F. Guthrie* (No. 2210).

The flowers are light rosy red. Belongs to Bentham's section *Poderemia*, and approaches *E. tubercularis*, Benth., differing by its larger smooth and dry (not viscid) corolla and its aristate anthers. From description it must also be very like *Erica* (*Euryloma*) *trichroma*, Benth. of which the author remarks, "Tam habitu quam characteribus inter *Ericam pectinatam* et *Eremiam notabilem* [*tubercularem*] media et genera nimis artificialia jungit." The cells of the ovary, however, appear to be constantly 1 ovuled, the corolla is always smooth and dry, and there can be no doubt that it is at least specifically distinct.

Simochilus viscosus, n. sp.—Fruticulus humilis spithamæus, ramulis pubescentibus; folia 3na, anguste ovata obtusissima, dorso sulcata, subcartilagineo-ciliata glabra nitida erecto-patentia, 1·5 mill. longa; flores terminales in capitulis multifloris viscosissimis 7 mill. diametientibus conferti; bracteæ 3 approximatæ, inferiore late ovata foliis duplo majore; calyx campanulatus 4 fidus, laciniis subæqualibus, corolla 3plo brevior; corolla tubulosa, medio subinflata, apice contracta 4-fida, glabra viscosissima, 4 mill. longa; filamenta complanata, antheris terminalibus exsertis scabris; ovarium pubescens 1-loculare 1-ovulatum, ovulo sub apice lateraliter inserto pendulo, stylo longo exserto, stigmate parvo capitato.

Hab: Cape Colony, South-western Region, in sandy places, Droogevlakte near Riversdale, alt. 125 meters, fl. Jan., *R. Schlechter* (No. 2142).

Distinct by its flowers closely agglutinated in dense heads (separable by soaking in kerosene). The large lower bract is also remarkable.

VARIETIES OF SHERARDIA ARVENSIS L.

By G. Claridge Druce, M.A., F.L.S.

Early last year, while looking through the expensive and unsatisfactory *Flora Batava*, I noticed in the seventeenth volume a plate numbered 1352, lettered *Sherardia arvensis* var. *Walravenii* Wirtg., which appeared to differ from the type only in having the length of the calyx-limb much reduced. It was discovered, according to Kops and Van Eeden, in 1883 by Walraven; the figure,

which is much better drawn than usual, is from a specimen collected in the Hook of Holland.

I began at once to examine all the specimens of *Sherardia* in our Oxford herbaria, and as many fresh specimens as I could collect. In our herbaria I found specimens of this variety from Mitcham in Surrey, and from Hartlepool. In some cornfields on the chalk near Hurley I found it growing with the type, and afterwards at Culham and Wootton, in Berkshire, and subsequently at Forest Hill, in Oxfordshire, in which county our herbarium assistant Baker also found it in sandy fields near Headington. All the Scotch specimens that I have examined so far belong to the type. A white-flowered form (*S. neglecta* Coss. et Germ.) which I have from Oxford and Berkshire has also the long calyx-teeth of the type. The plant from Hurley was rather more hairy than usual (var. *hirsuta* Baguet), and a plant which I gathered in Glen Spean had rather broader leaves than usual (var. *ovata* Fisch.-Benz.), but neither the breadth or narrowness of the leaves or their hairiness or absence of hairs warrant varietal names. This var. *Walravenii*, which is differentiated by the very greatly reduced calyx-limb, appears to be worth closer study, especially when the generic characters which separate *Sherardia* and *Asperula* are considered.

Later in the year my valued correspondent, Prof. Ascherson, sent me a copy of his paper in *Berichte der Deutschen Botanischen Gesellschaft*, xi. 29 (1893), on a remarkable variety of *Sherardia arvensis*, which he identifies with the variety named and described by Grisebach in the *Flora Rumelica*, vol. ii. 1844, p. 169, as var. *maritima*, "foliis breviter ovatis, dentibus calycis sub anthesi exiguis corniculiformibus (demum excrescentibus), corolla rosea. *Ic. an. Flora Danica*, t. 439." In Wirtgen's *Herb. plant. select.* Fasc. viii. No. 365, the same plant was distributed under the name of *Sherardia arvensis* var. *mutica*, "calyx almost effaced, fruit with 6 short broadly triangular naked teeth. This remarkable plant, which actually departs from the character assigned to the genus by many authors, *i. e.*, 'fruit with six subulate teeth,' deserves to be raised to the dignity of a species, and I would therefore propose the name *S. Walraveni* for it in honour of the discoverer. But before I determine upon this, I will cultivate and further observe it." Ascherson gives a long list of localities where this plant has been found, including some from Germany, Netherlands (from the narrow strip of Netherlands territory south of the Western Scheldt), Belgium (battle field of Waterloo), Denmark, Italy, European Turkey, and Asia Minor. In seven cases this shortness of calyx-limb was combined with a denser hairiness. That the plant has some degree of constancy may be inferred from the fact that it has occurred for three successive years in the same locality.

Ascherson says:—"We do not need Wirtgen's proposed experiments in the cultivation of the plant to enable us to reject decidedly the specific difference which he assumed as possible. This form is united, like the variety *hirsuta*, with the type by transitions, and this combination and the manner of its appearance give it the character rather of a variation of subordinate

taxonomic importance. Among the further characters given by Grisebach, the broader leaves answer to the form *ovata* of Detharding and Fischer-Benzon, hence Grisebach's form, and Calvert's, which is identical with it, that is, the coast form from the Sea of Marmora and the Hellespont, and Schweinfurth's form from Sardinia, present a combination of all the three variations of *Sherardia arvensis* hitherto described. It must be observed that the arrest of growth of the calyx is not in any way connected with the sexual differences in *Sherardia* first noticed by Hermann Mueller." The specimens examined by Ascherson had bisexual flowers. Wirtgen had remarked that the hairs on the teeth disappear as the reduction increases, and Ascherson points out that is also the case on the ovary and fruit. The specimens from the Hook, from Dresden and Hersek, showed a particularly scanty array of small bristles on the fruit, which is the more striking because all three belong to the var. *hirsuta* of Baguet. Ascherson goes on to say that the chief interest attaching to this form lies in this, that it throws gravest doubt upon the value of the character by which *Sherardia* has for nearly two hundred years been distinguished from *Asperula*, especially as the calyx in *Asperula* and *Galium*, according to frequent statements in the literature, is sometimes found more distinctly produced than usual. For this reason Höck has suppressed *Sherardia*, and follows Boerhaave and Baillon in restoring the single species to the genus *Asperula* (under the name of *A. Sherardi*), from which Dillenius had separated it. In determining the question whether this reduction is admissible, the other genera of *Stellatæ* must be considered.

Of the British genera, *Rubia* is known by its succulent fruit, but the separation from each other of the genera *Galium* and *Asperula* leaves much to be desired in point of clearness and naturalness; the difference in the length of the corolla-tube in many cases is so dubious that not a few European species have been placed in either genus by different or by even the same author. On the whole, there is so great agreement between single species and groups of species in *Asperula* and *Galium*, pointing to a real phytogenetic affinity, that a truly natural arrangement should not turn on the character which is derived from the length of the tube, and which is so often uncertain. The close affinity of our Woodruff, *Asperula odorata*, with *Galium triflorum*, which also contains coumarin, is undeniable; between *Asperula lævigata* and *Galium rotundifolium*, and, to omit others, between *Asperula Aparine* and *Galium uliginosum*. Scopoli had the same conception of the matter, for in the *Flora Carniolica* he placed most of the species of *Asperula* under *Galium*, not as a separate section or subgenus, but in different places among the species of *Galium*. Ascherson agrees with Scopoli in the opinion expressed in the *Flora Carniolica*, i. p. 99, that the characters of the fruit are in this case more important than those of the flower.

Such being the uncertain state of the delimitation of the genus *Asperula*, it is necessary to proceed with especial care in the absorption of *Sherardia* into it; and it is right to ask—are there

no characters, other than that of the calyx-limb, which has been seen to be untrustworthy, which separate the two genera? Ascherson sees in the elongated form of the fruit and the longitudinally furrowed partial fruit a character, which for the present sanctions the maintenance of the genus *Sherardia*, for he was unaware of a similar character in any species of *Asperula*, the fruits in them being either spherical or broader in the transverse section. I may say that, according to my limited experience, I have had no difficulty in referring the specimens of *Sherardia* to the type or to the variety, and that in our specimens the reduction in length of the calyx-limb is very pronounced and fairly uniform. That it is not a question of soil or conditions is shown by the occurrence of the two plants growing together.

FIRST RECORDS OF BRITISH FLOWERING PLANTS.

COMPILED BY

WILLIAM A. CLARKE, F.L.S.

(Continued from p. 153.)

Plantago major and **P. lanceolata** L. Sp. Pl. 112, 113 (1753). **1538.** "Plantago . . . ejus duæ sunt species major & minor. Majorem vulgus appellat waybred aut Plantane. Minorem vero Rybwort, rybgyrse, aut Lancell."—Turn. Libellus.

P. media L. Sp. Pl. 113 (1753). **1597.** "Hoarie Plantaine —almost everywhere."—Ger. 340.

P. maritima L. Sp. Pl. 114 (1753). **1597.** "At Gravesend; at Erith neere London; at Lee in Essex," &c.—Ger. 343.

P. Coronopus L. Sp. Pl. 115 (1753). **1548.** "Coronopus . . . called in Cambryge herbe Iue . . . groweth muche aboute Shene aboue London, it loueth wel to growe by the sea banks also." —Turn. Names, C v.

Littorella juncea Berg. in Act. Holm. xxix. 341 (1768). **1670.** "On Hinton-Moor near Cambridge, on the moist fenny grounds about Glastenbury, Pensans, &c."—Ray, Cat. 169.

Illecebrum verticillatum L. Sp. Pl. 206 (1753). **1670.** "In humidioribus pascuis & palustribus udis circa Pensans, et alibi versùs extremum Cornubiæ angulum."—Ray, Cat. 248. ?"Alsine floribus ad instar Polygoni marini, ad singulas alas albis . . . sent me from Cornwall."—Merrett, 5 (1666).

Herniaria glabra L. Sp. Pl. 218 (1753). **1597.** "It ioyeth in barren and sandie grounds, and is likewise founde in dankish places that lie wide open to the sunne."—Ger. 455.

H. ciliata Bab. in Linn. Soc. Trans. xvii. 452 (1837), **1686.** "Invenimus spontaneam in promontorio Cornubiensi The Lizard Point dicto."—Ray, Hist. i. 214, 6. Prof. Babington (*l. c.*) refers the Lizard plant to this *H. ciliata*.

H. hirsuta L. Sp. Pl. 218 (1753). **1880.** Found by Mr.

Townsend near Christchurch, Hants, July 19, 1879.—Journ. Bot. 1880, pp. 51 & 381. Previous records under this name seem to have been inaccurately referred to this species.

Corrigiola littoralis L. Sp. Pl. ed. 2, 388 (1762). **1787.** "Found by Mr. Hudson on Slapham Sands beyond Dartmouth and near the Star Point."—With. Bot. Arr. ed. 2, 322. There is in Herb. Banks a specimen sent to Banks by Hudson in 1784.

Scleranthus annuus L. Sp. Pl. 406 (1753). **1570.** "Anglica Saxifraga . . . inter Chipnam et Marlburum Angliæ Bristoliensi a Londino via."—Lob. Adv. 183.

S. perennis L. Sp. Pl. 406 (1753). **1677.** "About Elden in Suffolk plentifully."—Ray, Cat. ed. 2, 239.

Chenopodium polyspermum L. Sp. Pl. 220 (1753). **1597.** "Neere unto pathwaies by ditch sides and in the borders of fields."—Ger. 257.

C. Vulvaria L. Sp. Pl. 220 (1753). **1597.** "Upon dung hills," &c.—Ger. 258 ("Atriplex olida"). "Hampstead Heath."—Johns. Enum. (1632).

C. album L. Sp. Pl. 219 (1753). **1629.** "Atriplex sil: sinuata."—Johns. Eric. 12 (1629).

C. ficifolium Sm. Fl. Brit. i. 276 (1800). **1713.** "Buddle's Fig Blite. Lond."—Pet. Herb. Brit. Cat. viii. 3.

C. murale L. Sp. Pl. 219 (1753). **1634.** "Atriplex syl. latifolia acutiore folio, Bauh."—Johns. Merc. Bot. 22. ["A. sylvestris latifolia altera," Ger. em. 328, 2, probably refers to this.]

C. hybridum L. Sp. Pl. 219 (1753). **1704.** "Circa Colcestriam in Anglia inventa est. D. Dale."—Ray, Hist. iii. 123. "Maple Blite. Lond."—Pet. Herb. Brit. Cat. viii. 7 (1713).

C. urbicum L. Sp. Pl. 218 (1753). **1713.** "Broad pointed Blite. Lond."—Pet. Herb. Brit. Cat. viii. 8.

C. rubrum L. Sp. Pl. 218 (1753). **1629.** Hampstead Heath. —Johns. Eric. ("Atriplex sil. laciniatis foliis. Pes anserinus").

C. botryodes Sm. E. B. 2247 (1811). **1811.** "We are obliged to the accurate Mr. Wigg for pointing out this plant to us near Yarmouth."—E. B. 2247.

C. glaucum L. Sp. Pl. 220 (1753). **1713.** "Rand's Oak Blite. London."—Pet. Herb. Brit. viii. 1.

C. Bonus-Henricus L. Sp. Pl. 218 (1753). **1570.** "Tota bona Spinaciæ facie—Bonus Henricus—Angl. English Mercury."—Lob. Adv. 97.

Beta maritima L. Sp. Pl. ed. 2, 322 (1762). **1633.** "Growes wilde upon the sea coast of Tenet [Thanet] and divers other places by the sea."—Ger. em. 319.

Atriplex littoralis L. Sp. Pl. 1054 (1753). **1655.** "Salsugine riguis juxta ædes D. Richardi Garth, non procul ab Ostio sive portu, vernaculo discursu Portsmout, triplicem atriplicem maritimam collegi."—Lobel, Stirp. Ill. 85.

A. angustifolia Sm. Fl. Brit. iii. 1092 (1804). **1633.** "A. sylvestris angustifolia."—Ger. em. 326, 7.

A. patula Sm. E. B. 936 (1801). **1633.** "A. sylvestris vulgaris."—Ger. em. 326, 5.

A. deltoidea Bab. Prim. Fl. Sarn. 82 (1839). **1839.** "Primrose Hill, near London."—Babington, *l. c.* 83.

A. Babingtonii Woods, Tourist's Fl. 316 (1850). **1839.** "On the coast of Holy Island, Berwick, &c." (1838).—Babington in Ann. N. H. ii. 350 (*A. rosea*).

A. laciniata L. Sp. Pl. 1053 (1753). **1690.** "On the sea shore near Little Holland in Essex: found also by Mr. Dale in the Isle of Mersey not far from Colchester."—Ray. Syn. i. 36, 5.

A. portulacoides L. Sp. Pl. 1053 (1753). **1551.** "Cepea . . . may be called in English see purcellyne . . . I found the same herbe of late besyde the Ile of Porbek" (Purbeck).—Turn. Hb. i. j. iii, back (122).

A. pedunculata L. Sp. Pl. ed. ii. 1675 (1762). **1641.** "Atriplex marina semine lato nondum descripta."—Johns. Merc. Bot. pars alt. 16. "Neer Harlecham."—How, Phyt. 13.

Salicornia herbacea L. Sp. Pl. ed. ii. 5 (1762). **1568.** "Very plentuous in many places of England . . ."—Turn. iii. 37.

S. radicans Sm. E. B. 1691 (1807). **1713.** "Woody joynted glasswort."—Pet. Hb. Brit. ix. 4.

Suæda fruticosa Forsk. Fl. Ægypt. Arab. 70 (1775). **1570?** "In Sinus Bristoiensis Anglici Oceani Insulis vocatis Homs."—Lob. Adv. 162. "Ostendit nobis cl. vir D. Tho. Brown Norvicensis medicus in litore Norfolciæ collectum."—Ray, Syn. i. 38 (1690).

S. maritima Dum. Fl. Belg. 22 (1827). **1570.** "Ad septentrionem Angliæ familiaris" (Kali minus).—Lob. Adv. 170.

Salsola Kali L. Sp. Pl. 222 (1753). **1578.** "These herbes [Kali and Salicornia] grow in saltish groundes by the sea side . . . of England"—Lyte, Herb. 116.

Polygonum Convolvulus L. Sp. Pl. 364 (1753). **1548.** "Groweth among the corne & in hedges."—Turn. Names, C viii. (under *Elatine*).

P. dumetorum L. Sp. Pl. ed. ii. 522 (1762). **1837.** "Found September 20, 1834, in a wood at Wimbledon, by Mr. J. A. Hankey."—Babington in Linn. Soc. Trans. xvii. 460.

P. aviculare L. Sp. Pl. 362 (1753). **1538.** "Poligonon . . . vulgus appellat Swynegyrs & knotgyrs."—Turn. Lib.

P. Roberti Loisel, nouv. not. 17 (1827). (*P. Raii* Bab.). **1670.** "In arenosis maris litoribus, v. g. propè oppidum Pensans in Cornubia & alibi."—Ray, Cat. 249.

P. maritimum L. Sp. Pl. 361 (1753). **1837.** "At Christchurch Head on the sandy shore towards Muddiford. Mr. Borrer."—Babington in Linn. Soc. Trans. xvii. 458.

P. Hydropiper L. Sp. Pl. 361 (1753). **1548.** "Cratæogonum . . . Arssmerte . . . groweth in watery & moyst places."—Turn. Names. C v.

P. minus Huds. ed. i. 148 (1762). **1695.** "In moist meadows and watery places."—Petiver, Mus., Cent. i. 14.

P. mite Schrank, Fl. Bay. i. 668 (1789). **1838.** "About London; Lagasca [**1826**, fide Fl. Middx. 245] and Mr. Borrer. Near Cambridge, Mr. Babington."—Hook. Brit. Fl. ed. 4, 165.

P. Persicaria L. Sp. Pl. 361 (1753). **1568.** "Persicaria . . .

Arsmert whiche hath the blacke spotte in it . . . groweth most commonlye in moyst places."—Turn. iii. 62.

P. lapathifolium L. Sp. Pl. 360 (1753). **1696.** "In the lands and furrows of Hedington Field above S. Bartholomew's Hospital half a mile from Oxford. . . . A. D. Jacobo Bobarto observata & descripta est."—Ray, Syn. ii. 58.

P. maculatum Trimen & Dyer in Journ. Bot. 1871, 36. **1724.** "Passim circa Londinum."—Ray, Syn. iii. 145.

P. amphibium L. Sp. Pl. 361 (1753). **1597.** "In standing waters . . . almost everywhere" ("Potamogeton angustifolium"). —Ger. 675.

P. Bistorta L. Sp. Pl. 360 (1753). **1568.** "Called in some places of England Astrologia and in some places Pationes."—Turn. iii. 12. "The great Bistort grows in moist and watery places."—Ger. 323 (1597).

P. viviparum L. Sp. Pl. 360 (1753). **1597.** "In Westmerland, at Crosby Ravenswaith, at the head of a parke belonging to one Master Pickering."—Ger. 323.

Oxyria digyna Hill, Hort. Kew. 158 (1769). **1640.** "A gentleman of Anglesey called Mr. Morris Lloid of Prislierworth found it on a mountaine in Wales."—Park. Theatr. 745.

Rumex conglomeratus Murr. Prod. Gott. 52 (1770). **1629.** "Lapathum acutum vulgare."—Johns. Kent, 2.

R. sanguineus L. Sp. Pl. 334 (1753). **1640.** "As a pot herb planted in gardens, yet found wild also."—Park. Theatr. 1227.

R. maritimus L. Sp. Pl. 335 (1753). **1641.** "Lapathum fol. acuto, flore aureo, *Bauh.* . . . . In uliginosis."—Johns. Merc. Bot. pars alt. p. 24.

R. limosus Thuill. Fl. Par. ed. ii. 182 (1799). (*R. palustre* Sm.). **1700.** "Lately found in Tothill fields by Mr. Isaac Rand."—Pluk. Mant. 112. This is given as first British record in Fl. Midd. 239, but Babington (Fl. Cambs. p. 200) cites Ray's "Lapathum aquaticum sive Hydrolapathum minus Ger. emac. [389] Park. [1225]" as this species.

R. pulcher L. Sp. Pl. 336 (1753). **1666.** "Common in St. George's Fields, and other places about London."—Merrett, 69.

R. obtusifolius L. Sp. Pl. 335 (1753). **1633.** Figured and described Ger. em. 388, 3, but probably referred to by Turner (Herb. ii. 121).

R. acutus L. Sp. Pl. 335 (1753) (*R. pratensis* Mert. & Koch). **1834.** "Marshes of the Adur, near Henfield, Sussex, where it was first distinguished [by Mr. Borrer] in 1820."—E. B. Suppl. 2757.

R. conspersus Hartm. Skand. Fl. i. 147 (1820). **1855.** "A hybrid not uncommon in Kinross-shire, particularly in the parish of Orwell . . . seems to be *R. conspersus* Hartm."—Hooker & Arnott's Brit. Fl. ed. vii. 368 (under *R. aquaticus*).

R. crispus L. Sp. Pl. 335 (1753). **1633.** "A varietie [of Lapathum acutum] with crisped or curled leaves."—Ger. em. 387.

R. aquaticus L. Sp. Pl. 336 (1753). **1830.** "Moist places near Ayr, Mr. Goldie."—Hook. Brit. Fl. 168.

R. Hydrolapatheum Huds. ed. ii. 154 (1778). **1597.** "Great

Water Docke . . . in ditches & watercourses very common through Englande."—Ger. 312.

R. Acetosa L. Sp. Pl. 337 (1753). **1538.** "Lapathon . . . acetosum . . . . quam vulgus appellat Sorell, aut Sourdoc."—Turn. Lib.

R. Acetosella L. Sp. Pl. 338 (1753). **1562.** "We have two kindes of wilde Dockes . . . and so many kindes have we also of Oxalis or Sorell."—Turn. ii. 121. "Oxalis tenuifolia—Oseille de brebis . . . tanto luxu sabulosis . . . Angliæ importuna."—Lob. Adv. 120 (1570).

(To be continued.)

SHORT NOTES.

SONCHUS ARVENSIS var. ANGUSTIFOLIUS IN LANCASHIRE. — This graceful variety of *Sonchus arvensis* has, I believe, hitherto been recorded, for British botany, only from Wells, on the coast of Norfolk. Its discovery there by Dr. Long is noted in the *Transactions* of the Norfolk and Norwich Naturalists' Society for 1886, p. 255. In August last I collected it on the sand-banks which form the coast just north of Blundellsands, between Liverpool and Southport. But few specimens were seen, and they were past the flowering stage, but still bearing pappus abundantly. They have been identified as var. *angustifolius* Meyer by Mr. Arthur Bennett, who also named the Norfolk plant. The variety is thus shown to occur on the west as well as the east English coast. Mr. Bennett has favoured me with the following further particulars of its distribution, &c.:—

Sonchus arvensis L., var. *angustifolius* G. F. W. Meyer in *Chloris Hanoverana*, p. 424 (1836). = *S. arvensis* L., var. *arenarius* Hallier, (Helgoland) in *Nordseestudien*, p. 119 (1863). Near Friburg, Otterndorf, Altenbruch, Spicha, in Hanover. In the Ostfriesland islands of Borkum, Nordeney, Langeroog, Spikeroog. Leaves narrow, smaller and more entire than in type, less deeply cut, and the anthodes smaller. It also occurs on the coast of Holland, at Scheveningen, on the sand-dunes; Bosch, *Prodromus Floræ Batavæ*, i. 135, 1850.—WILLIAM WHITWELL.

SILENE CONICA L. IN SOMERSET.—Yesterday I received from Miss Alice May, of Minehead, a fine plant of *Silene conica*, which she had gathered on the Warren. She speaks of "a small patch," but it is quite possible that the plant may be more widely spread, as the Warren is of considerable extent. I am unable as yet to form any definite opinion as to the claim of the plant to be considered native. —R. P. MURRAY.

DR. LEONARD PLUKENET.—Since the publication of the article in this Journal (1882, pp. 338–342), a few additional particulars have come to my knowledge, which may be put on record. In that account of his family I omitted to give his daughter Theodora, as

her baptism was entered in the register as a daughter of "Wm."; but a comparison of dates makes it almost certain that the child was one of Leonard's large family. She was baptized Nov. 23rd, 1679, ranking after Robert and before Alan, and was one of the five (if not six) of his children who died in early childhood, for her burial is noted as occurring on March 9th, 1678/9, when about four months old. This augments the number of his children to thirteen, instead of twelve. Pulteney's statement that Plukenet had a son Richard, who was at Cambridge at the time of the publication of the *Almagestum* in 1696, must, I think, be a mistake; I have made careful and repeated search through that volume, and my efforts have been in vain; other enquirers have experienced the same failure, and Messrs. Trimen and Dyer, in their *Flora of Middlesex*, p. 375, cite this only on the authority of Pulteney. It is most probable, considering the attachment to certain names in his family, that his eldest son bore his own name, Leonard, in which case his first son was his fifth child; this Leonard is one of his seven children mentioned in his will. Dr. Leonard Plukenet used the same term to two of his early associates—"olim condiscipulus noster": to Uvedale and Courten; but this term must simply mean schoolfellow, for although Uvedale went to Cambridge, the names of Courten and Plukenet are not in the list of Cambridge graduates of that time. Uvedale was born at Westminster, May 25th, 1642, and was educated at Westminster School under the celebrated Dr. Busby, whence it seems likely that both Courten and Plukenet are to be reckoned as having spent a portion of their boyhood under the same rigorous master. We find a few hints as to his early botanical studies in the *Almagestum;* he speaks of having observed *Phlomis purpurea* Linn. in Edward Morgan's garden at Westminster, near the Abbey, about thirty years previously (p. 329), and *Euphorbia maculata* nearly forty years before in Dr. Walker's garden (p. 372): most of his plants came from friends, but he mentions his own little garden as affording a certain *Centaurea* (p. 193). His degree of M.D. was probably not obtained at Leyden, for his name is absent from the index to the *Album studiosorum Academiæ Lugduno Bataviæ*, 1575–1875.—B. Daydon Jackson.

Avena elatior var. bulbosa.—May I through your columns ask those of your readers interested in grasses whether they have observed the flowers of the onion couch, the so-called var. *bulbosa* of *Avena elatior?* I ask the question because in some specimens lately submitted to me all the florets were hermaphrodite, instead of one being male, one bisexual, in each spikelet. Moreover, the tuft of hairs which is usually conspicuous at the base of the flower in *A. elatior* is wanting in the var. *bulboa.* The herbarium specimens of the "bulbous" form are destitute of flower, and, so far as I have seen, no mention is made of the flowers in the books. It would be interesting to know whether the bisexual condition of both flowers in the spikelet is the ordinary condition or no.—Maxwell T. Masters.

NOTICES OF BOOKS.

A Monograph of Lichens found in Britain: being a descriptive catalogue of the species in the Herbarium of the British Museum. By the Rev. JAMES M. CROMBIE, M.A., F.L.S., F.G.S., &c. Part I. London: Printed by order of the Trustees. 1894. Price 16s. Pp. viii, 520; figg. 74.

"HERE let none unskilled in Lichenology enter." Such is the conclusion to which one is speedily led upon looking into Mr. Crombie's Catalogue of British Lichens; and such would have formed an appropriate inscription wherewith to adorn the cover. For difficult, most difficult, is the study of Lichens, and abstruse and severely technical is the character of the Catalogue. Heavy tribulations await the would-be student. Rough and toilsome is the path; and few are likely to surmount its obstacles and pursue it with full measure of success. To take an illustration, one of the many difficulties which confront the wretched student at the outset is the extraordinarily complex and cumbrous terminology, to which a general course of botany is little or no preparation. Lichenologists are in the habit of describing their plants in terms of one another. They call, for instance, the apothecia of the genus *Leptogium* "lecanorine or biatoroid." One knows that there is a genus *Lecanora*, and naturally turns up the description of its apothecia, thinking to settle the question of their structure once for all. But what does one find? The apothecia of *Lecanora* are "lecanorine, occasionally biatoroid." Well, that won't work. Let us try *Biatora*. This turns out to be an old genus which is no longer maintained; it is now merged in *Lecidea*—a vast genus containing hundreds of species, of which the apothecia are "biatorine, gyalectoid, or lecideine." Sold again! The upshot of all this is that a copious glossary is an indispensable adjunct to every Handbook of Lichens, and incessant recourse must be had to it. Therein shall you find such figures of speech as "isidio-furfuraceous," "coralloideo-granuloso-crustaceous," "livido-carneo-fuscescent," &c.—epithets far more effective than those elementary geometric terms with which the great O'Connell silenced the abusive old Irish fishwife.

But to return to Mr. Crombie's Catalogue. As was mentioned above, it is of a very technical character; and an adequate review can only be written by an expert who by a life-long study of this difficult group of plants has made himself thoroughly acquainted with their systematic values. The readers of this Journal may, however, be interested to have a short account of the nature and contents of the work.

Mr. Crombie's Monograph is, as is stated on the title-page, "a descriptive catalogue of the species in the Herbarium of the British Museum," and is "printed by order of the Trustees." Its origin is explained by Mr. Carruthers in the prefatory note as being due to the rearrangement and growth of the collection. At the same time it includes very nearly, if not quite, all the species known to occur in the British Isles. There are, for instance, a few which have been described but never distributed, and thus they are unknown quantities to any but the finders.

Part I.—the present volume—deals with about one-half of the subject reckoned in species, or more than two-thirds reckoned in genera. Of the 92 genera described in the synopsis at the beginning, 66 are worked out in detail. 7 genera are comprised in Family I. —the *Ephebacei;* 12 in Family II.—the *Collemacei;* and of Family III.—the *Lichenacei*—47 genera are given, taking us to the end of *Urceolaria*, and leaving to Part II. of the Monograph from *Lecidea* onwards. The bulk of Part II. will thus be occupied with the two large genera *Lecidea* and *Verrucaria*, and the tribe *Graphidei*. The remaining tribe *Myriangiacei* contains one solitary genus. Upon comparing Part I. with the corresponding ground mapped out in the third edition of Leighton's *Lichen-Flora*, published in 1879, it will be found that 459 species in Leighton (or Leigthon, as continental botanists not infrequently prefer to spell the name) have increased to 580 species in Crombie; and 53 genera to 66. Of the genera employed by Leighton, one—*Sirosiphon*—is omitted as insufficiently known: and three—*Psoroma*, *Squamaria*, and *Placodium* —are treated as subgenera of *Lecanora*. On the other hand, seventeen genera, thirteen of which have been coined in the Nylanderian mint, are put in circulation by Mr. Crombie. Thus in the family *Ephebacei* we have *Euopsis* Nyl. comprising two species split off from *Pyrenopsis*, *Ephebeia* Nyl. one species from *Ephebe*, and *Magmopsis* Nyl. one species, *M. argilospila*, which is synonymous with Leighton's *Verrucaria arenicola*. In the family *Collemacei*, *Lichiniza* Nyl. contains one rare species from Kenmore, in Perthshire, and "is most probably allied to *Lichina*." *Schizoma* Nyl. takes one species from *Collema*, and *Collemodium* Nyl. one from *Collema* and six from *Leptogium*, with one recruit not known to Leighton. *Dendriscocaulon* Nyl. is, as is also the case with one in the following family, a pseudo-genus, and "is only a leprarioid condition of *Leptogium*." Its single species, *D. bolacinum* Nyl., "constitutes the glomeruli of *Ricasolia glomulifera*"—or rather *R. amplissima*, for the latter is the accepted name on p. 275, where the species is described. In the family *Lichenacei* ten genera are added. Of these, one—*Leprocaulon* Nyl.—is a pseudo-genus, and is only "a fruticulescent *Lepraria*" with a "superficial resemblance to *Stereocaulon*, to which, however, it is not even allied." Another pseudo-genus is *Leproloma* Nyl., which has a leprarioid thallus, and for this reason is separated off from *Amphiloma* (a genus confined to the tropics), under which name it appeared in Leighton. Its true position is uncertain, as its fructification has never been seen. *Stenocybe* Nyl. derives its three species from *Calicium;* while *Parmeliopsis* Nyl. (two species), *Lobarina* Nyl. (one species), *Lobaria* Hoffm. (one species), *Peltidea* Ach. (two species), and *Gyrophora* Ach. (ten species), are established at the expense of *Parmelia*, *Stictina*, *Sticta*, *Peltigera*, and *Umbilicaria* respectively. The true *Gyrophora erosa* of Acharius, a very scarce Scotch plant, is defined and separated off from *G. torrefacta* Cromb. (*G. erosa* of other British authors). *Pannularia* Nyl. and *Coccocarpia* Pers., with eight and one species respectively, are lopped off from *Pannaria*. *Varicellaria* Nyl. contains "only a single species . . . . which has recently been recorded as British." It is remarkable for possessing "spores which are the largest observed among

lichens," and which may attain a length of one-third of a millimetre. At the other end of the scale *Calicium* with its allies may be noted as having spores only 1-400th of a millimetre in length. *Lecanora* is of course by far the biggest genus hitherto dealt with, and contains 197 species grouped into seven subgenera which formerly ranked as distinct genera. Six of these are small, and together cover only twenty-six species; the remainder constitute the subgenus *Eulecanora*, which is itself divided into sixteen groups, some of which have by certain authors been regarded as genera. Attention may be called to one species which ought to interest the Londoner. It is *L. galactina*, remarkable as being the only lichen which can withstand the pernicious atmosphere of the metropolis; it grows on composite walls in the more open suburbs, and is not uncommon. The pseudo-genera *Variolaria* and *Isidium* of older authors are omitted as having been founded merely on degraded states of *Pertusaria*.

Among the more noticeable features of the volume may be mentioned the seventy-four very clear woodcuts supplied in illustration of the genera. This is method of illuminating the subject which is seldom adopted by lichenologists; it is therefore the more welcome in the present instance, especially as these illustrations have been specially prepared for the work. The type, the paper, and general appearance of the volume are excellent. Excellent also is the plan of showing at the head of every brace of pages the family, tribe, and genus under discussion. We should like to give a specimen of Mr. Crombie's method of dealing with the species; but space forbids. Suffice it to say that the description is followed by a full synonymy, valuable remarks of a critical character, habitat, distribution in Great Britain, and the localities of the specimens in the British Museum.

In conclusion, two passages may be quoted as showing that lichenologists are laying claim to plants which algologists are unlikely to relinquish. On p. 18 Mr. Crombie says:—"Various Scytonemas probably belong to this genus"—*Gonionema;* and on p. 39, "There is every reason to believe that some Nostocs are undeveloped states of different species of this and perhaps also of the following genus"—*Collema* and *Collemodium*. A. G.

Botanical Charts and Definitions. By A. E. Brooke, A.C.P., and A. C. Brooke. London: George Philip & Son. 1894. Price 9d.

These Charts and Definitions have been prepared by the Misses Brooke as a summary of the work required for the S. Kensington (Elementary) and Oxford and Cambridge Junior Local Examinations. Such charts and tables are often very helpful to a beginner, and those before us are drawn up with care, and contain much condensed information; but they are not free from inaccuracy: e. g., *Pterodophyta* is used throughout for *Pteridophyta;* the *Euphorbiaceæ* are described as monœcious, although one of the commonest plants of the order, *Mercurialis perennis*, is diœcious. We fail to understand why annular roots are described as "adventitious" rather than as "true" roots. "Spongioles: The mouths at the extremity of the hairs" is surely unaccountable. Most readers

will prefer the old spelling of "radicle" to the new "radical" adopted by the authors. There are other minor errors of the kind, which might easily be rectified in another edition. A. L. S.

Lichens of the Isle of Man, collected in September, 1892. By W. H. Wilkinson, F.L.S., F.R.M.S. Birmingham.

This is a paper of ten pages, illustrated with twenty-two woodcuts, which was read before the Birmingham Natural History and Microscopical Society in the early part of last year. It was printed (though no mention of this is made on the title-page) in the *Midland Naturalist* for 1893, and now appears as a separate publication. It comprises forty-five species of lichens, five varieties, and ten forms, named and classified in accordance with the 3rd edition of Leighton's *Lichen-Flora*. The author has evidently taken great pains with his work, and has made a careful microscopic examination of his specimens. Moreover, he has added descriptions in popular language, and introduced several figures of spores and other minute structures. He expresses a hope that this preliminary list may awaken an interest in the lichen-flora of the Isle of Man, and that in time a complete list may be forthcoming. So excellent a beginning undoubtedly merits a successful conclusion. A. G.

Practical Photo-Micrography. By Andrew Pringle, F.R.M.S. London: Iliffe & Son. Pp. 160; figg. 29. Price 5s.

Mr. Pringle has long been recognised by the photographic world as one of its greatest authorities. Some few years ago he began to turn his attention to the application of photography to the microscope, and by his untiring industry and scientific acuteness was soon able to introduce many valuable improvements into the methods of photo-micrographic research, and to bring it to a high pitch of excellence. Thereupon he embodied his experiences and views in the form of a book, and finding it to meet with great success, he determined to issue a cheaper and more popular manual, combining a maximum of the practical with as little of the theoretical as was possible—a guide, in fact, for the inexperienced. This is the book of which the title is given above. No date is mentioned on the title-page, but the preface is dated "November, 1893." Well printed and illustrated, concisely and clearly written, the book is admirably fitted for its purpose. Chapters I.–X. deal with the microscopic side of the question—apparatus, illumination, colour treatment, &c. Then follow the purely photographic processes—exposure, development, printing, &c. Not a step of the whole procedure is omitted; indeed, alternative methods are offered in nearly every case—all bearing the unmistakable touch of the master's hand. Chapter XVII. describes the cutting of sections by the microtome, and the staining of preparations to obtain the best results. The only fault that can be found with the book is one for which the author is not responsible. Pages 2, 4, 6, and 8, which ought to be blank, are covered with garish advertisements—most offensive eyesores.

A. G.

Some New European Floras.

Epitome Floræ Europæ terrarumque affinium sistens plantas Europæ, Barbariæ, Asiæ occidentalis et centralis et Sibiriæ, quoad divisiones, classes, cohortes, ordines, familias, genera, ad characteres essentiales exposita. Auctore T. Caruel. Fasc. i. Monocotyledones; Fasc. ii. Corollifloræ, &c. Florentiæ, Jan. 1892, Maio 1894. 8vo, pp. 288.

Flora der nordwest deutschen Tiefebene bearbeitet von Prof. Dr. Franz Buchenau. Leipzig: Engelmann. 1894. 8vo, pp. xv, 550.

Flore de France: contenant la description de toutes les espèces indigènes disposées en tableaux analytiques et illustrée de 2165 figures représentant le types charactéristiques des genres et des sous-genres. Par A. Acloque. Paris: Baillière. 1894. 8vo, pp. 816.

Tableaux synoptiques des plantes vasculaires de la Flore de la France. Par Gaston Bonnier et Georges de Layens. *5289 figures représentant les caractères de toutes les espèces qui sont décrites sans mots techniques, et une carte des régions de la France.* Paris: Dupont. [1894.] 8vo, pp. xxvii, 412. Price 9 fr.

The titles of these books set forth in some detail their contents and objects, and the pressure on our space prevents our dealing with them at any considerable length.

Professor Caruel's *Epitome* is accurate and scholarly, and its value is increased by the full and carefully compiled bibliography attached to each genus. It fills for the region of which it treats the position which the *Genera Plantarum* occupies for the world at large, and, like that work, is written in Latin. A clavis to the genera of each order would, we think, have been a useful addition, and the numbers attached to the genera should run through each order, instead of beginning afresh with each subtribe. When completed this will form a handy volume of reference, as much for the bibliography as for the definition of the genera.

Prof. Buchenau's Flora of the North-west German plain is an extremely careful descriptive enumeration of the plants of a not very interesting region. The arrangement begins with the ferns and ends with *Compositæ*, and the text is in German throughout. The description and notes suggest many interesting points for comparison between this and the British flora, and we hope to have an opportunity of noticing the book at greater length on some future occasion. For the present we must content ourselves with calling the attention of our readers to what is evidently a valuable addition to works of its class. There is a good bibliography; but the index is confined to the genera, the names of which, by the way, should be at the head of each page—a point of convenience too often neglected.

French field botanists are to be congratulated on the ample provision which is made for their requirements. The simultaneous issue of two works by competent authors on the Flora of France implies a demand for this kind of literature which reflects favourably upon the attitude of the country towards science. The work of

MM. Bonnier and De Layens is published under the auspices of the Minister of Public Instruction. It is an illustrated key, of the kind which has been already provided for the fungi of France, which was noticed in this Journal for 1891 (p. 283); and the ingenuity there commented on is at least as noteworthy in the present Flora. The characters selected for illustration are taken from such parts of the plant as most easily distinguish the species; sometimes a tiny figure of the whole is introduced. There is a glossary, and a small but useful map: the order of arrangement is that to which we in this country are accustomed, and the same is pursued in M. Acloque's book, for which we confess a preference. Here also the arrangement is that of a clavis, but the illustrations are limited to the genera, with the exception of those in the analytical table of families: the more compact shape of the book is handier for the pocket, and the type, though small, is beautifully clear. But it is difficult to decide which is the better book for the field unless one has an opportunity of testing them there, and it may be that the more ordinary arrangement of the pages in M. Acloque's volume predisposes us in its favour. It is evident, however, that a great deal of trouble has been bestowed upon each, and that either will form an invaluable companion upon summer rambles.

ARTICLES IN JOURNALS.

Annals of Botany (June).—J. G. Baker, 'New Ferns of 1892-3.'—R. J. Harvey Gibson, 'Anatomy of *Selaginella*' (4 plates).—A. C. Seward, *Rachiopteris Williamsoni*, sp. n. (1 plate).—J. B. Farmer & J. Reeves, 'Occurrence of Centrospheres in *Pellia epiphylla*' (1 plate).—J. R. Green, 'Germination of pollen-grain and nutrition of pollen-tube.'—P. Groom, 'Extra-floral nectaries of *Aleurites*.'

Bot. Centralblatt. (Nos. 27, 28).—E. Fischer, 'Resultate einiger neuerer Untersuchungen über der Entwicklungsgeschichte der Rostpilze.'—(Nos. 29, 30). J. R. Jungner, 'Ueber die Einwirkung des Klimas, hauptsächlich der Niederschläge, auf die Gestalt der Früchte.'

Bot. Gazette (June 20). — S. G. Wright, 'Leaf movement in *Cercis canadensis*' (2 plates). — W. Deane, 'Thomas Morong.'— F. C. Newcombe, 'Influence of mechanical resistance on life-period of cells.' — F. Renauld & J. Cardot, 'New Mosses of N. America' (2 plates). — E. Walker, '*Richardia africana*.' — G. F. Atkinson, '*Olpitrichum*, a new genus of mucedinous fungi' (1 plate). — A. J. McClatchie, 'Germinating myxomycetous spores.'

Bot. Zeitung (July 1). — E. Stahl, 'Einige Versuche über Transpiration und Assimilation.'

Bull. de l'Herb. Boissier (No. 6).—E. Bescherelle, C. Warnstorf, & F. Stephani, 'Cryptogamæ Centrali-Americanæ in Guatemala, Costa Rica, Columbia & Ecuador.' — C. J. Forsyth Major & W. Barbey, 'Kos.' — A. de Jaczewski, 'Sur quelques espèces critiques de Pyrénomycètes suisses.' — Perrier de la Bathie & A. Songeon,

'Sur quelques plantes nouvelles ou intéressantes de la Savoie.'—J. Briquet, 'Rectifications de nomenclature.'

Bull. Soc. Bot. France (xli, 4: June). — P. Duchartre, 'Fleurs soudées d'un Bégonia tubéreux.' — E. Gain, 'Sur une galle du *Chondrilla juncea*.' — E. Bourquelot, 'Hydrates de carbone du *Lactarius piperatus*.' — P. van Tieghem, 'Genres nouveaux de Loranthacées' (*Loxanthera*, *Amylotheca*, & *Treubella*).— —. Gagnepain, 'Nouveaux cas tératologiques' (*Salix*, *Draba*). — L. Trabut, '*Aristida ciliaris* et les fourmis.' — J. Daveau, *Cyperus pallescens* & *C. turfosus*' (1 plate). — P. Vuillemin, 'Structure du pédicelle des téleutospores chez les Pucciniées.' — D. Clos, 'Du démembrement du genre *Hypericum* et d'une singulière mépris afférente à l'*Helodes*.' —A. Chabert, 'Variations à fleurs rouges de certains *Galium*.'

Bull. Torrey Bot. Club (June 20). — N. L. Britton, 'Thomas Morong.'—Id., 'Revision of *Lechea*.'—A. Hollick, 'Fossil Salvinias' (1 plate).—E. P. Bicknell, '*Helianthemum canadense* & *H. majus*.'—T. H. Kearney, 'New or little-known plants of the Southern States' (4 plates).—L. M. Underwood, *Selaginella reflexa*, sp. n.

Gardeners' Chonicle (June 30).—*Angræcum Fournierianum* Kränzlin, sp. n.—(July 14). *Gastrochilus albo-luteus* Baker, sp. n.

Journal de Botanique (June 1). — A. Franchet, 'Sur le fruit du *Strophanthus glaber* et sur quelques *Strophanthus* de l'Afrique tropicale.'—A. de Coincy, 'Plantes nouvelles de la flore d'Espagne.'—N. Patouillard, *Pleurotus Cherallieri* & *P. suberis*, spp. nn.—(June 16). M. E. Belzung, 'Sur l'existence de l'oxalate de calcium a l'état dissons.' — N. Patouillard, 'Quelques espèces nouvelles de Champignons du nord de l'Afrique.'

Journ. Linn. Soc. (xxx, No. 208: July 10). — G. Henslow, 'Origin of Plant-Structures by Self-Adaptation to the Environment' (1 plate). — W. West, 'Freshwater Algæ from the West Indies' (4 plates).

Nuovo Giornale Bot. Ital. (July 9). — A. Terraciano, 'Quanta contribuzione alla flora romana.'—L. Nicotra, 'Elementi statistici della flora siciliana.'—E. Baroni & G. del Guercio, 'Sulla infezione prodotta nelle fragole dalla *Sphærella Fragariæ*.'

Oesterr. Bot. Zeitschrift (July).—A. Rehmann, *Hieracium amphibolum* (*Auricula* × *alpinum*; 1 plate). — R. Wettstein, 'Die Arten der Gattung *Euphrasia*.'—F. Arnold, 'Lichenologische Fragmente' — F. Kränzlin, 'Orchidaceæ Papuanæ' (*Sayeria*, gen. nov.). — J. Freyn, 'Plantæ novæ Orientales.' — H. Zukal, 'Zur Kenntniss der Cyanophyceen.'

BOOK-NOTES, NEWS, &c.

The last link connecting the present with the early history of the Ceylon Botanic Gardens has been broken by the death, on June 10th, of Harmanis de Alwis Seneviratne, Mudaliyar, at Peradeniya, at a very advanced age. His connection with the

Botanic Gardens dates back so far as 1818, when he served as a writer under Mr. Moon (the second Superintendent) at the old Gardens in Slave Island, Colombo, and at Kalutara, assisting him in the preparation of the *Catalogue of Ceylon Plants* (published in 1824). Mr. Moon, observing his aptitude for drawing, had him (at his expense) educated, and taught accurate draftsmanship. In 1821 the Gardens were moved to Peradeniya, and two years after, in 1823, Mr. De Alwis was appointed draftsman, a post he continued to hold for thirty-eight years. He at once commenced, under Mr. Moon's direction, the coloured drawings of Ceylon plants which have now become so large and valuable a series. So well did he do his work that Governor Barnes in 1831 conferred on him the native rank of Muhandiram. In 1836 Dr. Wight visited Ceylon, and was so interested in Mr. De Alwis's drawings that a few years after, in 1839, he had him at Madras for three months to be instructed in the practice of dissecting flowers. Some of the plates in *Icones Plantarum Indiæ Orientalis* were at this time drawn by Mr. De Alwis. In 1843, when Gardner arrived as Superintendent of the Gardens, he found already a good series of drawings; but under his auspices they rapidly increased in number and accuracy, it being Mr. Gardner's practice for the artist to accompany him in all his botanical tours. Dr. Thwaites, who succeeded in 1849, followed the same plan, and in the preface to his *Enumeratio Plantarum Zeylaniæ*, in 1864, acknowledges Mr. De Alwis's "intelligent and hearty co-operation" in the work. In 1854 an assistant draftsman was also at work in the person of one of the sons of Mr. De Alwis, and in this year the rank of Mudaliyar was bestowed on him by Governor Anderson. In 1861 he retired on full pension, which he has lived to enjoy for thirty-three years in the complete possession of his memory, and his senses, with the exception of failing eyesight. His name is commemorated in a very curious and minute leafless orchid, which he was the first to discover, and which was named after him in 1859, by Dr. Lindley, *Tæniophyllum Alwisii*. Dr. Lindley also named another little orchid *Alwisia tenuis*, but this has proved to be the same as *Eria articulata*.—H. T.

The *Bulletin of Miscellaneous Information* continues to justify its title. The number for July contains articles on the artificial production of citric acid, on the Flora of the Solomon Islands, by Mr. Hemsley (with descriptions of new species), on methods for exterminating locusts in the Caucasus, and on the preservation of books in the tropics, with a reprint from the *Standard* of Sept. 16, 1893, of a long paper on the importation of vegetables.

We are glad to learn that the seventh and last volume of the *Flora of British India* will contain a "general corrected index to the whole." The indexes to the volumes hitherto issued of this useful work have been by no means satisfactory, and a mere combination of these would not meet the needs of the case, the faults being of omission as well as of commission. We hope the name of the genus will be repeated at the head of each column, as is done in Mr. Jackson's great Index.

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CONTRIBUTIONS TO SOUTH AFRICAN ASCLEPIADOLOGY.

By R. Schlechter.

Decas i.

1. **Pentopetia natalensis**, n. sp. Glabra, volubilis, alte scandens; ramis lignosis teretibus verruculosis, densius foliatis; foliis coriaceis glaberrimis, oblongis obtusis petiolatis, 8–12 cm. longis, 3–4 cm. latis, petiolo 1–1·5 cm. longo; cymis extra-axillaribus terminalibusve laxe corymbosis, plurifloris, foliis brevioribus, pedunculo pedicellisque brevibus glabris; calycis segmentis lanceolatis triangularibus acutis glabris; corolla patula, tubo subnullo; lobis carnosulis anguste lanceolatis acutissimis subflexuosis, 1·2 cm. longis; coronæ foliolis erectis flexuosis setaceo-filiformibus acutissimis, gynostegium plure quam duplo excedentibus, corollæ lobis subduplo brevioribus; antheris conniventibus, filamentis liberis, circuitu ovatis apice appendiculo obtuso glaberrimo donatis, loculis basin versus divergentibus; polliniis granulosis ovato-oblongis obtusis, caudicula brevi, glandula bene conspicua rotundato-quadrata.

Ex speciminibus in Horto Botanico Natalensi cultis, a claro *J. M. Wood* prope Isipinga (Nataliæ) collectis.

As I have not seen any authenticated specimens of Harvey's *Leptopætia*, I cannot be quite sure whether this is the plant described by him, or not. However, there cannot be the slightest doubt about its being a true *Pentopetia*. The only noteworthy difference between our plant and the Mascarene species of *Pentopetia* lies in the very short tube of the corolla, and the glabrous appendices of the anthers. Although the flowers of the present species are not showy, being but small and of a light green colour, it is well worthy of being introduced in the greenhouses of Europe, for its fine dark leaves make it a really handsome plant.

2. **Gomphocarpus** (§ Krebsia) **stenoglossus**, n. sp. Glaberrimus, e basi ramosus, ad 20 cm. altus; ramis erectis, dense foliatis; foliis erectis angustissime linearibus acutis, marginibus haud revolutis, basi in petiolum brevissimum angustatis, 2–4 cm. longis, internodia superantibus; floribus in fasciculis subglobosis, extra-axillaribus, alternantibus, plurifloris, pedicellis filiformibus glaberrimis, floribus subduplo longioribus; calycis segmentis lanceolatis acuminatis glabris, corollæ lobis duplo brevioribus; corollæ campanulatæ lobis ovatis acutis glabris, apice recurvatis, vix 0·5 cm. longis, intus dealbatis; coronæ foliolis erectis e basi lanceolata apice linearibus obtusis, incurvis, dorso et intus medio longitudinaliter carinato-incrassatis, gynostegium superantibus; anthera basin versus conspicue dilatata, marginibus cartilagineis angustis obtusis, appendice hyalino brevi obtusissimo, marginibus loculorum profunde rotundato-emarginatis; polliniis anguste pyriformibus in caudiculam brevem filiformem abeuntibus; glandula minuta obtusa.

Kreilio country; *Mrs. Barber*, No. 293.

For a considerable time I have been in doubt where to put this puzzling plant. At first I thought of placing it in *Periglossum*, but

on examining the species of this genus as well as *Cordylogyne globosa* E. Mey., I was convinced that it could not go to either of them. Again, to restore the genus *Krebsia* of Harvey seems also unadvisable, as there were too few really good distinctions. After full consideration, I feel obliged to follow Bentham's view in uniting it with *Gomphocarpus*. It may be mentioned, too, as one of the intermediate species between the true *Gomphocarpi* and *Xysmalobia*; from both, however, it differs by the habit, the keeled corona-scales and the thick stigma, and these are the reasons for keeping it there as a distinct section. There is still another species of this section in my collection, which I shall publish later. Harvey mentions two species of *Krebsia*, so, as the present one is undoubtedly one of his types, it may be possible that my second species (*G.* (§ *Krebsia*) *carinatus* Schltr. MS.) is the other one mentioned by Harvey from Gerrard's Natal collection. But I have not seen any authenticated specimens of the latter.

3. **Gomphocarpus Woodii**, n. sp. Simplex, erectus, 40–50 cm. altus; caule stricto basi subnudo, medio hispido, paucifoliato; foliis erectis lineari-lanceolatis acutissimis, inferioribus breviter petiolatis, superioribus subsessilibus, glabrescentibus, costis margineque hispidulo-pilosis; 7–11 cm. longis, infra medium 0·8–1·4 cm. latis; cymis extra-axillaribus terminalibusque umbellatis plurifloris, pedunculo hispido, 2·5–4·5 cm. longo, pedicellis æquilongis pedunculo 2–3-plo brevioribus; calycis segmentis ovato-lanceolatis acutiusculis, hispidulis, corolla brevioribus; corolla subrotata, lobis ovatis obtusiusculis glabris, 0·7 cm. longis, medio 0·4 cm. latis; coronæ foliolis carnosis compressis, oblongis obtusis margine interiori utrinque lobulo erecto triangulari obtuso auctis, gynostegium vix superantibus; antheris brevibus subquadratis, appendice hyalina pro magnitudine antherarum in genere minimo, obtuso, marginibus loculorum profunde excisis; polliniis oblique ovalibus apicem versus margine interiori breve emarginatis, caudiculis dependentibus flexuosis, polliniorum longitudine, basin versus dilatatis glandula minima oblonga obtusa medio insertis.

Natal; *Gerrard et McKen.* Prope Howick, Dec. 1889; *J. M. Wood*, No. 4258.

This species is easily recognised by its very strict habit. The very obtuse corona-scales are well marked by their thick fleshy body, which is not concave or cucullate as in most other South African species. In this respect it comes near to *G. glaucophyllus* Schltr., a plant which is in other respects very different, and stands near to *G. fruticosus* R. Br. I know of very few other species of this genus in which the appendage of the anthers is relatively so small as in our plant. I am indebted for good specimens of this interesting species to my friend Mr. J. M. Wood, of Natal, in whose honour I have named it.

4. **Schizoglossum æmulum**, n. sp. Simplex, erectum, 20–25 cm. altum; caule basi nudo, glabrato, supra medium densius foliato, bifarium velutino-tomentoso, foliis patentibus oblongis subacutis, basi subhastatis vel hastato-cordatis, breviter petiolatis, glabrescentibus, costis pilosis, subtus pallidioribus, 2–4 cm. longis,

petiolo ad 0·3 cm. longo; cymis extra-axillaribus alternantibus, umbellatis, paucifloris; foliis brevioribus vel vix æquilongis, pedunculo villoso, pedicellis multo brevioribus tomentosis; calycis segmentis lanceolatis acutis pilosis, corolla duplo brevioribus; corollæ lobis erecto-patentibus ovatis obtusiusculis, glabris, marginibus reflexis, 0·6 cm. longis, coronæ foliolis suborbicularibus apice brevissime (subinconspicue) excisis, intus ligula bifida in stigma inflexa auctis; antheris quadrato-oblongis, appendice hyalino parvulo suborbiculari obtusissimo, anthera duplo breviore, marginibus loculorum rotundato-emarginatis; polliniis basi ovatis apicem versus compressis, subfalcatis, obtusis, medio caudicula affixis, caudiculis divaricatis brevibus tenue filiformibus, glandula oblonga obtusa pro magnitudine polliniorum majori medio insertis.

In clivis montium, Dutoits Kloof, alt. 1700 ped., Apr. 1882; *W. Tyson*, No. 852.

The nearest ally to this species is undoubtedly *S. virens* of the Eastern districts and Natal, from which it may be distinguished at first sight by its smaller flowers and proportionately longer pedunculate cymes, besides which there are a number of smaller differences, which are fully given in the above description. This group of *Schizoglossum*, to which nearly all the broad-leaved species belong, is the most difficult one of the whole genus, and requires very exact descriptions of the allied species.

5. **Schizoglossum excisum**, n. sp. Gracillimum erectum, velutino-tomentosum, c. 50 cm. altum; caule simplici tereti, stricto sparsim foliato; foliis erectis, subsessilibus, angustissime linearibus acutis, marginibus revolutis, glabrescentibus, internodia subæquantibus, 3–5·5 cm. longis; floribus in fasciculis extra-axillaribus alternantibus, 3–5-floris, pedicellis tomentosis filiformibus, inæquilongis; calycis segmentis lanceolatis acutis villosis, corolla duplo brevioribus; corollæ lobis erecto-patentibus ovato-oblongis apice breviter excisis, marginibus reflexis, 0·6 cm. longis; coronæ foliolis obovatis apice medio excisis ligulaque erecta lineari, apice hamata, gynostegium duplo superante, ornatis, intus ligula simili sed tamen breviori auctis; antheris oblongis, appendice hyalino brevi orbiculari in stigma inflexo, marginibus loculorum breviter excisis; polliniis oblique ovalibus, juxta apicem apiculo erecto, acutissimo, brevi, donatis, caudiculis filiformibus divaricatis glandula lineari acuta ima basi insertis.

In regionibus orientalibus Coloniæ Capensis loco incerto (probabiliter Caffrariæ); *Mrs. Barber.*

A very slender plant, which I have named *excisum* on account of the distinctly, although shortly, excised petals. It is one of the great number of Mrs. Barber's discoveries, and seems to have never been gathered again. It is rather difficult at present to mention any South African species to which it is nearly allied, as I have hitherto failed in finding any good distinctions whereupon to divide this difficult genus in sections; however, I hope to be able to publish a monograph of the whole genus when I return to Europe.

6. **Schizoglossum glanduliferum**, n. sp. Gracillimum, erectum, glabrum, 40–50 cm. altum; caule simplici flexuoso,

tereti, distanter foliato; foliis erectis angustissime linearibus acutis, marginibus revolutis, glaberrimis, internodiis 2–3-plo brevioribus, 1·3–2·7 cm. longis; floribus in fasciculis extra-axillaribus alternantibus 3–6-floris, ad apicem caulis, pedicellis inæquilongis pilosis; calycis segmentis ovato-lanceolatis acutis pilosis, 0·2 cm. longis, intus glandulis 5 ornatis; corolla subrotata, lobis ovatis subacutis glabris, 0·4 cm. longis; coronæ foliolis e basi cuneata trilobis, lobulis lateralibus brevioribus acutis, intermedio majore ovato acuto, vel lanceolato apice elongato in stigma inflexo; intus medio lamellis 2 parallelis infra apicem lobi intermedii squamella minuta terminatis, donatis; antheris oblongis, marginibus cartilagineis alæformibus basin versus ampliatis, loculorum longitudine, appendice brevi obtusissimo, apice in stigma inflexo, marginibus loculorum breviter rotundato-excisis; polliniis pyriformibus basin versus in caudiculam brevissimam filiformem, glandula parva ima basi insertam angustatis.

In Natalia interiore; *J. M. Wood*, No. 4804. In graminosis prope Fort William, in terra Pondoland, alt. 2500 ped., Decemb. 1885; *W. Tyson*, No. 2827.

Like many of its congeners, *S. glanduliferum* resembles at first sight very many others of this genus, but, I think, should best be placed near to *S. Aschersonianum* Schltr. (in *Verh. Bot. Ver Brandbg.* xxxv. p. 48) and *S. tomentosum* Schltr., described below. Both of these, like the present species, have distinctly three-lobed corona-scales. The cartilaginous margins of the anthers are here wing-like and very much widened towards the base, and about equalling the anther-cells. I have given the name *glanduliferum* on account of the five scale-like glands on the base between the calyx-lobes. Mr. Tyson's plants are a little stouter in appearance, and the middle lobe of the corona-scales is more elongated than in Mr. Wood's specimens, but in other respects they agree very well.

7. **Schizoglossum oblongum**, n. sp. Subsimplex, erectum 35–50 cm. altum, caule basi glabrato apicem versus tomentoso, dense foliato; foliis erecto-patentibus anguste oblongis breviter acuminatis, glabris, basi subauriculato-hastatis, marginibus revolutis breve petiolatis, subtus pallidis, 2–3 cm. longis, medio 0·5–0·8 cm. latis; cymis extra-axillaribus alternantibus, umbellatis, plurifloris, pedunculo tomentoso folia subæquante vel sæpius superante, pedicellis gracilibus filiformibus tomentosis inæquilongis; calycis segmentis lanceolatis acutis pilosis, corolla duplo brevioribus; corollæ lobis erecto-patentibus oblongis obtusissimis, 0·5 cm. longis, coronæ petiolis ovatis obtusiusculis apice recurvatis, intus ligula erecta duplo longiore, dorso foliolis alte adnata, apice alte bifida, absconditis; antheris oblongis, marginibus cartilagineis basin versus vix dilatatis loculos breves superantibus appendice hyalino oblongo obtuso, apice in stigma inflexo, marginibus loculorum rotundato emarginatis; polliniis ovato-oblongis obtusis, juxta apicem facie exteriore cresta brevi obtuso subtriangulari ornatis, caudiculis filiformibus divaricatis, pollinia haud æquantibus, glandula oblongo-rhomboidea obtusiuscula supra basin insertis.

In Natalia; *Gerrard et McKen.* Umhlongue, Apr. 1884; *J. M. Wood*, No. 3012.

From its nearest allies, *S. virens* E. Mey. and *S. tridentatum* Schltr., &c., this species differs by the caudiculæ, which are here not inserted about the middle of the pollinia, but on the top. Besides, it has a very distinct habit, caused by its very leafy stems. The large inner ligula of the corona-scales is very peculiar, for it entirely covers the inner face. The gland is somewhat large in proportion to the pollinia; the petals are very obtuse and glabrous. As far as yet known to me, this distinct species is confined to Natal, from where I got it in the two collections named above. I have not any notes respecting the colour of the flowers.

8. **Schizoglossum tomentosum**, n. sp. Gracillimum, erectum, simplex vel parum ramosum 50–85 cm. altum; caule tereti debili, tomentosa, sparsim foliato; foliis erectis linearifiliformibus acutis, glabrescentibus, subsessilibus, internodia haud æquantibus, ad 5 cm. longis; floribus in fasciculis extra-axillaribus alternantibus plurifloris; pedicellis brevibus inæquilongis tomentosis; calycis segmentis ovato-lanceolatis acutis tomentosis, corolla duplo brevioribus; corollæ lobis erecto-patentibus, ovatis obtusiusculis, extus sparsim pilosis intus glabris, 0·2 cm. longis; coronæ foliolis brevibus transversis trilobis, lobulis lateralibus brevibus subfalcato-lanceolatis acutis, intermedio duplo majore late triangulari acutiusculo, facie interiori medio squamellis 2 minutis distantibus, oblongis obtusis, donatis; antheris ovalibus, marginibus cartilagineis angustis basi haud ampliatis, obtusis, appendice hyalino suborbiculari obtusissima, apice in stigma inflexa, marginibus loculorum incrassatis, rotundato-emarginatis; pollinis longe pyriformibus obtusis, sensim in caudiculam angustatis, juxta apicem crista minuta obtusa margine exteriori donatis, caudiculis brevibus filiformibus glandula anguste oblonga obtusa juxta basin insertis.

In convalle Langkloof prope Ougelegen, flor. Nov. 1870; *H. Bolus*, No. 2399.

As mentioned above, this species has some affinity with *S. Aschersonianum* and *S. glanduliferum*. Besides many other differences, it differs from the latter by the want of the two ridges or lamellæ along the middle of the corona-scales, and by the presence of two small scales on the inner surface below the lateral lobes. To *S. Aschersonianum*, however, it is more nearly allied than might be supposed at first glance. Although the habit is very different, the corona-scales are very similar in shape; but *S. Aschersonianum* has a single short ligula in the middle of the inner surface, whereas the present species has a small scale on each side below the lateral lobes. To other differences which can leave no doubt as to its distinction may be added the tomentose indument of *S. tomentosum*.

9. Fanninia caloglossa Harv. *Gen. S. Afr. Pl.* ed. ii. p. 235 (1868). Herba erecta spithamæa, caule simplici subtereti, villosa, laxe foliato; foliis erecto-patentibus ovatis obtusis vel ovato-lanceolatis subacutis, longe pilosis, petiolatis, 3–5 cm. longis, media 1–2 cm. latis, petiolo villoso 0·5–0·8 cm. longo; cymis terminalibus singulis vel rarius geminis, umbellatis 4–8-floris, pedunculo folia excedente, piloso, pedicellis filiformibus pilosis

calyce 2–3-plo longioribus; calycis segmentis lanceolatis acutis pilosis, 0·6 cm. longis; corollæ campanulatæ lobis ovatis obtusis extus pilosis apice pilis longis sericeis villoso-barbatis, intus marginibus exceptis glabris, 1·2 cm. longis, medio 0·6 cm. latis; coronæ foliolis erectis planis, oblongis apice truncato-obtusatis subemarginatis, gynostegium superantibus, c. 0·6 cm. longis; medio 0·4 cm. latis, intus ima basi ligulis 2 approximatis, dimidiato-ellipticis, vix 0·2 cm. longis, ornatis; antheris subquadratis brevibus marginibus cartilagineis incrassatis basin versus paulo dilatatis, obtusatis, appendice hyalino e basi ovato lacerato-fimbriato, in stigma inflexo; marginibus loculorum profunde excisis; polliniis compressis oblique lanceolatis, apicem versus dilatatis, truncatis, caudiculis brevibus divaricatis basi valde ampliatis, glandula oblonga obtusiuscula infra medium affixis.

In clivis montis Malowe prope Clydesdale, in terra Griqualand Orientalis, alt. c. 4000 ped., Nov. 1885; *W. Tyson*, No. 2720 (Herb. Norm. Austr.-Afr. No. 897). Prope Baziya, in terra Transkei, alt. 2500 ped., Nov.; *R. Baur*, No. 553. Prope Thomas River, in ditione Cathcart, alt. 2600 ped., Jan. 1893; *H. G. Flanagan*, No. 1685.

This is undoubtedly one of the prettiest South African Asclepiads, and well worth describing, Harvey having only diagnosed the genus. Very remarkable are the lacerate appendages of the anthers, which are in that respect quite different from any other South Afrcian Asclepiads known to me. The corona-scales resemble some Schizoglossums in their structure, but the two scale-like ligulæ are adnate to them at the very base, and seem to adhere to each other at the top. The pollinia are not different from those of many *Gomphocarpi;* they are very much compressed from the sides, and very much widened towards their truncate base. The anthers are rather short and widened towards the base, but not otherwise peculiar, except as to their appendages mentioned above. The whole plant is more or less covered with silky hairs, especially the flowers. The colour of the flowers is white, with a little pink outside; the corona-scales are dark brownish purple.

10. **Dichælia pygmæa**, n. sp. Pusilla, velutina, e basi ramosa; ramis erectis adscendentibusve dense foliatis, velutinis; foliis patentibus spathulato-linearibus vel spathulato-ovatis breve acutis in petiolum brevem angustatis, costis margineque sparsim pilosis, 0·6–1 cm. longis; floribus in axillis foliorum singulis binisve gracile pedicellatis, pedicellis velutinis filiformibus, foliis paulo brevioribus; calycis segmentis anguste lanceolatis acutis pilosis, 0·1 cm. longis, corolla 0·5 cm. longa, tubo brevissimo, lobis erectis lineari-filiformibus, apice cohærentibus, extus glabris intus villosis, coronæ foliolis exterioribus in tubum brevissimum connatis, apicibus liberis brevibus late ovatis, medio breve emarginato-excisis, pilis niveis barbatis, foliolis interioribus linearibus obtusis glabris, antheras superantibus in stigma inflexis; polliniis oblique ovatis obtusis, caudiculis brevibus.

In regionibus orientalibus Coloniæ Capensis, verisimiliter Kaffrariæ, legit *Mrs. Barber*.

Of the known species of this highly interesting genus, which seems to be confined to South Africa, *Dichælia pygmæa* is the smallest. Since I have come to the conclusion that *Brachystelmaria*, which I formerly made a section of *Dichælia*, should rather rank as a distinct genus, *Dichælia* must be reduced to a single section, *viz.*, my first, *Eu-Dichælia*. From all the species of this section *D. pygmæa* is different by the not deeply bifid, but short, emarginated outer corona-scales. It is also very easily recognised from all the others by its very short flowers.

The genus *Dichælia* has been united incorrectly by some botanists with *Brachystelma* R. Br.; but it is in fact quite distinct from the latter, and has more affinity with *Ceropegia* than with any others, and therefore is better placed next to this genus, with which it also somewhat agrees in the shape of the corolla. Here I may mention that the plant figured lately by Hemsley and Collett (in *Journ. Linn. Soc.* (*Bot.*) xxviii. t. 14) as *Brachystelma edule* Hemsl. et Coll. does not seem to me to be a true *Brachystelma*; the shape of the corona is quite distinct from that of this genus.

RECENT ADDITIONS TO THE FLORA OF WEST GLOUCESTER AND MONMOUTH.

By W. A. Shoolbred, M.R.C.S.

In the last edition (1888) of *Topographical Botany* the records from Monmouthshire are somewhat scanty, and several of the more widely distributed plants are not recorded there for either that county or for the adjacent vice-county of West Gloucester. Since that date many of the gaps have been filled in through the observations of the late Mr. Burton M. Watkins, the Rev. Augustin Ley, the Rev. H. P. Reader, Mr. Whitwell, and others, some of which have been recorded in this Journal and in the Reports of the Record and Exchange Clubs.

I have notes of about 200 species which have been found, mostly during the past six or seven years, by myself and others in the Chepstow district, either in West Gloucestershire or Monmouthshire, or in both counties, which are not catalogued in *Topographical Botany* under their respective vice-comital numbers, 34 and 35.

With only one or two exceptions, all the plants in the following list have been gathered or seen by me in the localities named, and for many of the records I am alone responsible. In the case of anything of special interest having been to my knowledge previously found in the district by someone else, the name of the first finder is given.

The Rev. A. Ley kindly supplied me with a list of plants found some few years ago in the district by Mr. B. M. Watkins and himself, several of which are additional to their published records. Mr. H. A. Evans, of Westward Ho, formerly resident here, also gave me a list of his finds, which has been of much service. The

Rev. E. F. Linton has kindly informed me of two or three additions made by him last year, and other friends have also helped. Mr. Arthur Bennett has very kindly checked the "new records," and in several instances has added a note, as *e. g.* "Whitwell sp.," "Reader Cat.," &c., in cases where a species has been recorded in a marked catalogue, or by specimens sent him, and not included in published records. Mr. J. H. Clarke, of Usk, gave a list of Monmouthshire plants in his *Sketches of Monmouthshire* published in 1868, and this list as far as it goes has proved fairly correct as regards this part of the county; but as he gives no authorities, and the localities not being very definite, I have not quoted from it.

Many of the species are of wide distribution, and, as they occur in the neighbouring counties, might reasonably have been expected to occur here also; but a few are interesting as extending the range of less widely distributed plants. With very few exceptions, all have been found within an area of seventy or eighty square miles, namely, the lower ten miles or so of the valley of the Wye, and about four miles on either side—eastwards in West Gloucestershire and westwards in Monmouthshire. Several of Mr. Reader's records are from localities quite out of this district. For the sake of brevity, not more than one or two localities in each county have been given, and in the case of the Rubi the vice-comital numbers only, with the exception of one or two apparently rare or local forms.

While working at the brambles I have frequently had the advantage of the Rev. A. Ley's company, and nearly all of those enumerated have been found by us on those occasions. During a short stay here, two years ago, the Rev. W. M. Rogers helped us greatly by his extensive knowledge of the genus, giving names to some critical forms, and also adding one or two to the list which had not previously been detected. My best thanks are due to both these gentlemen for their kind help in naming the many specimens of Rubi sent them, and to Mr. Ley for other assistance; also to the Rev. E. S. Marshall, Mr. J. G. Baker, and Mr. Arthur Bennett for help in naming some critical and doubtful plants, and to the last named for very kindly revising this paper.

Ranunculus trichophyllus Chaix. 34. Woodchester. Recorded by Reader in *Journ. Bot.* 1886, 368. — *R. Drouetii* Godr. 35. Pool near Chepstow; brook at Pwllmeyrick.—*R. Baudotii* Godr. (segregate). 34 & 35. Ponds and ditches near the tidal rivers. — *R. auricomus* L. 35. Hedgerows and wood-borders; common.

Helleborus fœtidus L. 34. Woods, Pen Moel. 35. Woods near Llanvair Discoed. Recorded for v.-c. 34, *Journ. Bot.* 1886, 368.

Nasturtium palustre DC. 35. Bank of old reservoir near Tintern. —*N. amphibium* R. Br. 35. Wye bank, Bigsweir.

Barbarea arcuata Reichb. Road-side, Stroat and Woodcroft. Mr. Bennett says, "I have no doubt Herr Svanté Murbeck would name this *arcuata* (Opiz) Reich., but whether it is really the plant of Opiz I cannot say."

Cardamine amara L. 35. Rare; Mounton and Penterry.

Erophila vulgaris DC. 35. Common.

Sisymbrium Thaliana Hook. 35. Common. Recorded for v.-c. 35, *Reader, Journ. Bot.* 1886, 368.

Erysimum cheiranthoides L. 35. "Near Tintern"; *Monington, Journ. Bot.* 1888, 376.

Brassica oleracea L. 35. Plentiful on the cliffs below Chepstow Castle, together with the pure yellow-flowered form of *Cheiranthus Cheiri*, where there is little doubt that it has become established from seed shot down with rubbish from the Castle garden. This locality for the plant is mentioned in the *New Botanist's Guide* (1837).—*B. sylvestris* H. C. Wats. 34. Wye banks between Brockweir and Bigsweir. 35. Wye banks above Tintern; *Ley*. — *B. Briggsii* H. C. Wats. 35. Wye bank above Tintern. — *B. nigra* Koch. 35. Wye banks; *Watkins*.

Diplotaxis muralis DC. 35. Plentiful on railway-ballast.

Senebiera didyma Pers. 35. Chepstow, Matherne, &c.

Lepidium Draba L. 35. In abundance in a meadow by the Wye at Chepstow.

Thlaspi arvense L. 35. Sometimes abundant on cultivated land.

Viola odorata L., var. *alba* Auct. 34 & 45. Very common. The form *imberbis* also occurs in both. — Var. *sepincola* (Jord.). 35. Wyndcliff, Mounton, &c.—*V. lactea* Sm. 34. Plentiful on one part of Tidenham Chase. Recorded for 34 in *Top. Bot.* on Mr. Ley's authority, but from a station much further north. — *V. tricolor* L. 34 & 35. Not common.—*V. arvensis* Murr. 34 & 35. Very common.

Polygala vulgaris L. (*eu-vulgaris*). 34 & 35. Common. Recorded for v.-c. 35, *Whitwell, Journ. Bot.* 1891, 308. Less common than *P. serpyllacea*.

Saponaria officinalis L. 34 & 35. Wye banks above Tintern.

Silene maritima With. 34. Quarries and quarry-bases by the Wye.—*S. noctiflora* L. Nymphsfield, *Reader, Journ. Bot.* 1886, 368.

Lychnis alba Mill. 35. Not very common.

Cerastium arvense L. 34. "*Reader, Cat.*"

Stellaria aquatica Scop. 35. Plentiful on the Wye banks. Recorded for v.-c. 35, *Druce*, 1888.—*S. nemorum* L. 34. Boggy wood near St. Briavels. — *S. umbrosa* Opiz. 34. *White, Rec. Club Rep.* 1884–6.

Arenaria serpyllifolia L. and var. *leptoclados* (Guss.). 35. Common. Recorded for v.-c. 35, *Whitwell, Journ. Bot.* 1891, 308.

Spergula arvensis L. 35. Common. Recorded for v.-c., *Reader, Journ. Bot.* 1886, 368.

Lepigonum rubrum Fr. 35. Near Trelleck; *Ley*. — *L. salinum* Fr., a. *genuinum* Auct., and *L. medium* (Fr.). 34 & 35. Banks of Severn and Wye. — *L. marginatum* Koch. 34 & 35. Banks of Severn and Wye. — *L. rupestre* Kindh. 34 & 35. Banks of Severn and Wye. First found, 35, *Evans*.

Althæa officinalis L. 35. Severn bank near Roggiett and Magor.

Linum angustifolium Huds. 34. Tidenham Chase.

Geranium striatum L. 34. Hedge-bank near Woolaston. 35. In profusion on a bank near Pen y Parc, where it has been established for more than fifty years. This is probably the locality "near Chepstow" mentioned in early editions of Hooker's *British*

Flora. — *G. pusillum* Burm. f. 35. Chepstow; St. Arvans, &c. — *G. rotundifolium* L. 35. Gathered some years ago from the old town wall of Chepstow, but not seen lately. It is locally abundant about a mile and a half away on the West Gloucestershire side of the Wye. — *G. dissectum* L. 35. Common. Recorded for v.-c. 35, *Whitwell, Journ. Bot.* 1891, 308.

Euonymus europæus L. 35. Common.

Rhamnus catharticus L. 35. Mounton, rare. — *R. Frangula* L. 35. Common.

Medicago lupulina L. 35. Common. — *M. maculata* Sibth. 35. Chepstow.

Melilotus altissima Thuill. 34 & 35. Wye banks, &c.

Trifolium subterraneum L. 35. Severn shore, Matherne. — *T. medium* L. 35. Common. *Rec. Club Rep.* 1884–86. — *T. striatum* L. 35. Severn shore, Matherne. — *T. agrarium* L. 34. Stubble field, Tidenham Chase; *E. F. Linton*. — *T. dubium* Sibth. 35. Common.

Astragalus glycyphyllos L. 35. Rocky ground near Dinham; *Miss Woodall*, sp. 1894.

Vicia hirsuta Koch, and *V. tetrasperma* Mœnch. 35. Common. Recorded for v.-c. 35, *Whitwell, Journ. Bot.* 1891, 308. — *V. sylvatica* L. 34. Woods between Chepstow and Tintern, &c. Recorded by *Reader, Journ. Bot.* 1886, 368. — *V. sepium* L. 35. Common. Recorded by *Whitwell, Journ. Bot.* 1891, 303.

Prunus Avium L. 34. Plentiful in the woods.

Rubus Idæus L. 34 & 35. A white-fruited form once seen near Trelleck. — *R. fissus* Lindl. 34 & 35. — *R. suberectus* Anders. 34 & 35. — *R. plicatus* W. & N. 34 & 35. — *R. affinis*. 34. Limestone Wood, Tutteshill. — *R. imbricatus* Hort. 35. Whitebrook and Redbrook; *Ley*. — *R. rhamnifolius* W. & N., var. *stenoplos* Focke. 34 & 35. — *R. nemoralis* P. J. M., var. *pulcherrimus* Neum. 34 & 35. — *R. carpinifolius* W. & N. 34. Tidenham Chase; *E. F. Linton*. — *R. villicaulis* Koehl. 34 & 35. — *R. Lindleianus* Lees. 34 & 35. — *R. erythrinus* Genev. 34 & 35. — *R. argentatus* P. J. M. 34 & 35. — *R. rusticanus* Merc. 34 & 35. — *R. silvaticus* W. & N. 34 & 35. First found in 35 by Mr. Rogers. — *R. macrophyllus* W. & N., var. *macrophylloides* (Genev.). 35. Near Tintern; *Rogers & Ley*. — Var. *amplificatus* (Lees). 35. — Var. *glabratus* Bab. 34. — *R. Myricæ* Focke. 35. Beacon Hill; *Ley*. — Var. *virescens* G. Braun. 35. Beacon Hill; *Ley*. — *R. micans* Gren. & Godr. 34 & 35. — *R. pyramidalis* Kalt. 35. — *R. Sprengelii* Weihe. 35. — *R. leucostachys* Schleich. 34 & 35. — Var. *angustifolius* Rogers. 35. — *R. lasioclados* Focke. 35. Beacon Hill; *Ley*. — *R. Borreri* Bell-Salt. 34 & 35. — *R. anglosaxonicus* Gelert, var. *setulosus* Rogers. 34 & 35. — *R. radula* Weihe. 35. — Var. *sertiflorus* P. J. M. 35. Wentwood. — Var. *echinatoides*. 35. Near Trelleck; *Ley*. — *R. echinatus* Lindl. 34 & 35. — *R. scaber* W. & N. 34 & 35. — *R. pallidus* W. & N. 35. — *R. longithyrsiger* Lees. 35. — *R. foliosus* W. & N. 34 & 35. — *R. cavatifolius* P. J. M. 34 & 35. — *R. rosaceus* W. & N., var. *infecundus* Rogers. 34 & 35. — *R. obscurus* Kalt. 35. — *R. Kœhleri* W. & N. 34 & 35. — Var. *pallidus* Bab. 34 & 35. — Var. *plintho-*

stylus (Genev.). 35.—*R. viridis* Kalt. 35.—*R. serpens* Weihe. 35. —*R. hirtus* W. & K. 35. Near Usk.—*R. dumetorum* W. & N., var. *diversifolius* (Lindl.). 34 & 35.—Var. *scabrosus* (P. J. M.). 34 & 35. — *R. corylifolius* Sm., var. *sublustris* (Lees). 34 & 35. — Var. *conjugens* (Bab.). 34 & 35. — Var. *fasciculatus* P. J. M. 35. — *R. Balfourianus* Blox. 34 & 35. — *R. cæsius* L., var. c. *arvensis* Wallr. 34 & 35. — Var. d. *intermedius* Bab. 34 & 35. — *R. saxatilis* L. 34 & 35.

Potentilla Fragariastrum Ehrh. 35. Very common. — *P. procumbens* Sibth. I have no record of *procumbens* pure from the district, but the following hybrid forms have been detected by Mr. Marshall among specimens submitted to him by Mr. Ley and myself:— *procumbens* × *Tormentilla*. 34. St. Briavels. 35. Near Chepstow; Devanden, &c.—*procumbens* × *reptans*. 34. Tidenham; Sedbury. 35. Chepstow, Trelenny, &c. — *P. argentea* L. 34. *Reader, Cat.*

Alchemilla vulgaris L. 34. Not uncommon. Recorded for v.-c. *Reader, Journ. Bot.* 1886, 369.

Poterium Sanguisorba L. 35. Common.

Rosa spinosissima L. 54. Pen Moyle and Bannager Cliffs. — *R. mollis* Sm. 34. Tidenham Chase. 35. Near Tintern; Trelleck, &c. Recorded for v.-c. 35, *Reader, Journ. Bot.* 1886, 369.—*R. micrantha* Sm. 35. *Ley, Rec. Club Rep.* 1883.— *R. stylosa* Desv. 34 & 35.— Var. *systyla* (Bak.). 35. Near Tintern.

Pyrus torminalis Ehrh. 35. Common. — *P. intermedia* Ehrh. 34. Pen Moyle Cliffs. 35. Piercefield Woods; limestone cliffs, Mounton. First found, 35, *Ley*, Piercefield; vide *Eng. Bot.* ed. 3, Supplemental Bot.—*P. Malus* L. 34 & 35. Common.

Sedum rupestre Huds. 34. Limestone cliffs by the Wye; new station, not a new county record.—*S. Forsterianum* Sm. (*teste* G. S. Boulger). 34. Limestone cliffs, now destroyed by quarrying; *Evans*.

Hippuris vulgaris L. 35. Ditches by the Severn between Magor and Roggiett.

Myriophyllum spicatum L. 35. Not uncommon in the Wye and elsewhere.

Callitriche hamulata Kuetz. 34 & 35. Rather common.

Epilobium roseum Schreb. 35. Tintern; *Ley*. Shirenewton, &c. —*E. tetragonum* L. 35. Chepstow; *Ley, Rec. Club Rep.* 1881–82. —Forma *stenophylla*. 35. Tintern; *Ley*. — *E. obscurum* Schreb. 34. Not uncommon. Recorded for 34, *Reader, Journ. Bot.* 1886, 369.—*E. Lamyi* Wirtg. 34. Quarry-bases by the Wye. 35. Chepstow; *Ley*. The following hybrids have been named by Mr. Marshall among plants gathered in the district by Mr. Ley and myself:— *E. montanum* × *parviflorum*. 34. Quarry-base by Wye. — *E. montanum* × *obscurum*. 35. Wall, Tintern. — *E. adnatum* × *obscurum*. 35. Tintern; *Ley*. — *E. adnatum* × *palustre*. 35. Tintern; *Ley*.— *E. obscurum* × *palustre*. 35. Tintern; Trelleck, &c.

Conium maculatum L. 35. Common. Recorded by *Whitwell, Journ. Bot.* 1891, 308.

Smyrnium Olusatrum L. 35. Chepstow Castle and Wye bank.

Sison Amomum L. 35. Common.

Anthriscus sylvestris Hoffm. 35. Very common.

Œnanthe silaifolia Bieb. 35. Meadows below Tintern; *Ley in Rec. Club Rep.* 1881–82.

Galium erectum Huds. 35. Near Chepstow.

Valeriana Mikanii (Wats.). 34 & 35. Common. Recorded for v.-c. 35, *Druce*, 1888.

Valerianella carinata Lois. 34. Wall-base, Tuttshill.

Aster Tripolium L. 35. Severn and Wye banks, plentiful. Recorded for 35, *Reader*, *Journ. Bot.* 1886.

Bidens tripartita L. 35. Matherne. Recorded for 35, *Reader*, *Journ. Bot.* 1886, 369.

Artemisia maritima L. 35. Banks of the Severn and Wye.

Senecio viscosus L. 35. Railway-ballast, Tintern, Roggiett, &c. —*S. aquaticus* Huds. 35. Common. *Rec. Club Rep.* 1884–86.

Carlina vulgaris L. 35. Wyndcliff. First found by Watkins.

Arctium majus Schk. 34. Tidenham.

Cnicus eriophorus Hoffm. 35. Howick. First found by Evans.—*C. acaulis* Hoffm. 35. Banks near Wyndcliff.

Crepis taraxacifolia Thuill. 34. Locally plentiful about Tutshill and Woodcroft. 35. Wye bank, Chepstow. Probably only a casual in the Monmouthshire locality.

Hieracium Schmidtii Tausch. 34. Abundant on an old limestone wall at Tuttshill. — *H. Gibsoni* Backh. 34. Plentiful in an old quarry by the Wye near Chepstow. — *H. stenolepis* Lindeb. 34. Cliffs and quarries between Pen Moyle and Llancaut.—*H. murorum* L. pt. 35. Plentiful on the sandstone near Tintern, less common on the limestone. — *H. vulgatum* Fr. 35. Very plentiful. — Var. *sciaphyllum* Uechtr. 34 & 35. — *H. tridentatum* Fr. 35. Near Trelleck; *Ley*.

Leontodon hirtus L. 35. Not uncommon.

Tragopogon porrifolius L. 34 & 35. Plentiful in meadows below Tintern, on both banks of the Wye. Probably descended from the Old Abbey cultivation. Recorded for 35 by *Ley & Watkins*.

Inula Helenium L. also is quite established near the ancient ruined churches of Llancaut, in West Gloucestershire, and Runstone, in Monmouthshire; also near Dinham.

Vaccinium Oxycoccos L. 35. Very sparingly on Trelleck Peat Bog. Discovered by Watkins.

Pyrola minor Sw. 35. Wyndcliff Woods.

Armeria maritima Willd. 35. Plentiful between Magor and Roggiett.

Primula veris × *vulgaris*. 34 & 35. This hybrid does not appear to be as common as might be expected from the abundance of the parents.

Vinca minor L. 35. Woods near Tintern. Recorded by *Monington*, *Journ. Bot.* 1888, 376.

Gentiana campestris L. 35. Near Trelleck.

Lycopsis arvensis L. 35. Near Tintern.

Myosotis collina Hoffm. 35. Tintern, Runstone, Mounton, &c.

Solanum nigrum L. 35. Near Chepstow; *Reader*, *Journ. Bot.* 1886, 369.

Bartsia Odontites Huds., var. *verna* Reichb. 35. Near Chepstow.

Orobanche minor Sm. 34. Stroat. Recorded for v.-c. 34, *Reader*, *Journ. Bot.* 1886, 369.

Mentha rubra Sm. 34 & 35. Plentiful on both banks of the Wye; also by the brook at Mounton. — *M. gentilis* L. 35. Wye banks above Tintern.—*M. Pulegium* L. 34. Meadow at Sedbury.

Salvia Verbenaca L. 35. Between Chepstow and St. Arvans. First found by J. H. Morgan.

Scutellaria minor L. 34. Tidenham Chase, &c. Recorded for 34, *Reader*, *Journ. Bot.* 1886, 369.

Stachys palustris L. 35. Wye banks, &c.; common.

Lamium purpureum L. 35. Very common. — *L. maculatum* L. 34. Established near ruined cottages.

Scleranthus annuus L. 35. Wall-tops, Trelleck; *Ley*. Between Kilgwrrwg and Itton; *Evans*.—Var. b. *biennis* (Reut.). 35; *Whitwell*, *Journ. Bot.* 1891, 308.

Atriplex littoralis L. 34 & 35. Wye banks, Chepstow. — *A. patula* L. 35. Wye banks, &c. — Var. *angustifolia* Sm. 34 & 35. Wye-banks, &c.—*A. deltoidea* Bab. 34 & 35. Banks of Severn and Wye.—*A. Babingtonii* Woods. Shore of Severn near Matherne.

Salicornia herbacea L. 35. Mud-banks by Severn and Wye.

Suæda maritima Dum. 35. Mud-banks by Severn and Wye.

Polygonum aviculare L. 35. Common. Recorded for v.-c., *Reader*, *Journ. Bot.* 1886, 369. — Var. *arenastrum* (Bor.). 35. By the Wye, Chepstow. — *P. mite* Schrank. 34 & 35. Wye banks; *Ley*, *Rec. Club Rep.* 1880–84.

(*Daphne Mezereum* L.). Formerly grew native in the woods on both sides of the Wye, but appears now to be quite extinct. — *D. Laureola* L. 34. Common in the woods. Recorded for v.-c. 34, *Reader*, *Journ. Bot.* 1886, 369.

Humulus Lupulus L. 35. Not uncommon. Recorded for v.-c. 35, *Whitwell*, *Journ. Bot.* 1891, 308.

Euphorbia Cyparissias L. 35. Established near old ruins at Runstone.

Urtica urens L. 35. Near farm buildings.

Betula glutinosa Fr. 34. Tidenham Chase, &c. Recorded for 34, *Rec. Club Rep.* 1886.

Salix cinerea L. 35. Common.—*S. Caprea* L. 35. Common.

Populus tremula L. 34. Cliffs by the Severn at Sedbury. Recorded for v.-c. 34, *E. F. Linton*, 1885.

Cephalanthera ensifolia Rich. 35. Plentiful in woods near Chepstow Castle. Recorded for 35, *Reader*, *Journ. Bot.* 1886, 369.

Epipactis latifolia Auct. 34. Woods by the Wye. Recorded for v.-c. 34, *Reader*, *Journ. Bot.* 1886, 369.

Habenaria bifolia R. Br. 34 & 35. Not uncommon in some seasons, but uncertain in its appearance. — *H. chloroleuca* Ridley. 34. Sometimes plentiful. Recorded for v.-c. 34, *Reader*, *Journ. Bot.* 1886, 369.

Iris fœtidissima. 34. Woods by Wye near Chepstow. 35. Near Portskewett. Recorded for 34, *Reader*, *Journ. Bot.* 1886, 369.

Galanthus nivalis L. 35. Apparently truly native in woods near Shirenewton.

Polygonum multiflorum All. 35. Wentwood, but doubtfully native.

Allium vineale L. Common. Recorded by *Whitwell, Journ. Bot.* 1891, 308.—*A. oleraceum* L. 35. Near Caldicot.

Lilium Martagon L. 34. Plentiful in woods on West Gloucestershire side of the Wye, in two or three stations separated by the distance of a mile or two from each other. The localities are at a long distance from buildings, and the plant has all the appearance of being native. In one wood bordering on Offa's Dyke it is in great abundance, and much more luxuriant than one usually sees it in gardens. 35. Border of Coppice Wood, near Fair Oak Farm, between Tintern and Penterry. Recorded for 34, *Evans, Journ. Bot.* 1884, 213.

Juncus squarrosus L. 35. Trelleck Common.—*J. Gerardi* Lois. 34 & 35. Plentiful in meadows near the Severn and the Wye. Recorded for 34, *Reader, Journ. Bot.* 1886, 370.—*J. maritimus* Lam. 35. Severn bank near St. Pierre Pill. — *J. supinus* Mœnch. 34. Tidenham Chase.

Luzula pilosa Willd., var. *Borreri* (Bromf.). 35. Mounton; Tintern.

Typha latifolia L. 35. Pools near Chepstow and Tintern; ditches, Roggiett.

Sparganium ramosum Curtis. 34. Tidenham. 35. Mounton and Roggiett. Recorded for 34, *Reader, Journ. Bot.* 1886, 370.

Lemna trisulca L. 35.—*L. gibba* L. 35.—*L. polyrhiza* L. 35.

Triglochin palustre L. 35. Trelleck Bog; *Watkins.* — *T. maritimum* L. 35. Severn and Wye banks.

Potamogeton perfoliatus L. 34 & 35. In the Wye, &c. *Reader*, sp. 1886. — *P. crispus* L. 35. Common in ponds and in the deep embanked ditches draining into the tidal rivers, locally called "reens."

Zannichellia brachystemon J. Gay. 35. Ponds and reens by the Severn.—*Z. pedunculata* Reichb. 35. Reens by the Severn.

Schœnus nigricans L. 34. Found in 1889 by Rev. A. Ley and myself, growing near a spring half-way up the cliffs by the Severn at Sedbury. Some specimens measured 40 in.

Scirpus maritimus L., b. *compactus* Reichb. 35. By the Wye below Tintern, and reens near Roggiett. Appears to be only a "state," not a true variety.

Carex vulpina L. 35. Common.—*C. curta* Good. 35. Trelleck Bog, and boggy wood near Tintern.—*C. ovalis* Good. 35. Not uncommon. Recorded for v.-c., *Reader, Journ. Bot.* 1886, 370. — *C. acuta* L. 35. Wye banks, &c. — *C. pallescens* L. 35. Boggy wood near Trelleck; Mounton, &c. — *C. lævigata* Sm. 34. Boggy wood near St. Briavels. 35. Trelleck Bog; *Ley, Rec. Club Rep.* 1880. Boggy wood near Tintern; Chepstow Park Wood. — *C. riparia* Curtis. 35. Common; Wye banks, and reens near the Severn.—*C. rostrata* Stokes. 35. Trelleck Bog; pond-margins near Tintern. —*C. vesicaria* L. 35. Trelleck Bog; *Watkins.*

Millium effusum L. 35. Common.

Calamagrostis epigeios Roth. 35. Not uncommon near Chepstow.

Trisetum flavescens Beauv. 35. Common.

Catabrosa aquatica Beauv. 35. Wye banks, and reens near the Severn.

Melica nutans L. 34. Limestone cliffs and woods, common. Recorded by *Reader*, *Journ. Bot.* 1886, 370.

Poa pratensis L. 35. Common.

Glyceria maritima Wahl. 35. Waste ground, Chepstow; *Ley.* Severn-shore, Matherne.—*G. distans* Wahl. 35. Wye bank, Chepstow.

Bromus erectus Huds. 35. Meadow, St. Arvans.

Lastræa æmula Brackenridge. 34. Near Chepstow.

Osmunda regalis L. 34. Boggy thickets, West Gloucestershire side of Wye above Tintern. Rapidly becoming eradicated.

Botrychium Lunaria Sw. 35. In small quantity in a meadow near Mounton. First found by R. S. Hutton, 1894.

Equisetum palustre L. 35. Trelleck Bog, and near Tintern.

Lycopodium clavatum L. 34. *Reader*, *Rec. Club Rep.* 1881–82. 35. Wentwood, and between Tintern and Bigsweir.

Chara vulgaris L. 35. Between Chepstow and Itton; ditches near Magor.

Nitella opaca Agardh. 34. Pond on Tidenham Chase.

BIBLIOGRAPHICAL NOTES.

VI.—The Indexing of Periodicals.

A periodical that is badly indexed is thereby deprived of at least half its usefulness—probably more. This being so, it is strange that so much carelessness and incapacity are displayed in the making of indexes. I desire to call attention to some examples of bad indexes, in the hope that something like uniformity may be introduced: and I propose to confine myself to periodicals published in this country.

The daily use of indexes for many years has convinced me that the most convenient mode is to combine everything in one alphabet—a plan adopted in this Journal from its commencement, and in the later volumes of the *Journal of the Linnean Society* (Botany). It is difficult to see why so simple a method, the advantages of which are obvious, is not universally adopted.

Indexes may err by omission and commission: by exclusion and inclusion. The latter failing is less common, but hardly less irritating: it takes the form of enumerating every casual reference to a subject, and is exemplified in the indexes to the new series of the *Phytologist*, and to Mr. Francis George Heath's works. The otherwise excellent index to the Linnean Society's *Journal* (xxix. 1891–3) is, I think, tainted with this failing:—Mr. F. N. Williams's monograph of *Dianthus* is too elaborately indexed, preLinnean names are entered, the reduction of synonyms is given at length, and their place of publication is cited: *e. g.*, "*ambiguus* Salisb.

Prodr. 303 = monspessulanus"; and the authorities for the species are given almost throughout the index. In this it seems to me the object of an index, which is not to give information but to point out where it may be found, is overlooked; and it must be remembered that conciseness is a most desirable feature, so long as it does not interfere with completeness. The index in question, which occupies 36 pages, might be reduced by at least one-third without any diminution of its usefulness.

As an example of omission, the current *Annals of Botany* stands pre-eminent. Incredible as it may appear, there is no real index to contents of the volumes, what is so-called consisting of two parts: "A. Original Papers and Notes," entered under the authors' names alphabetically arranged, and "B. List of Illustrations." It is thus necessary to know who wrote on a subject before the subject itself can be referred to; for there is absolutely no indication whatever by which it can be traced. This "index" occupies two pages, and is simply a rearrangement of the list of "contents" which precedes it—a list in which the contents of each number are given, and the often erroneous date of publication printed on the wrapper of each part is rendered permanently misleading. The bibliographical side of the *Annals* has from the first been very weak; but it seems strange that no one of the many eminent men associated with it has ever been struck with the extraordinary omission to which attention is here called. Mr. Jackson in his *General Index* to the Linnean *Journal* (Botany), points out that in one of the insufficiently indexed volumes (vol. x.) the single word *Agaricus* is the only indication "of an enumeration which extends to more than ten pages, with twenty-four new species"; but in the *Annals* Mr. J. G. Baker's "Summary of the new Ferns which have been discovered or described since 1874," extending over 117 pages, has only this reference in the index, though it abounds in new species and deals with between 50 and 60 genera. It would indeed seem as if special pains had been taken to make this so-called "index" useless, for such entries as "a new genus of Tuberculariæ" carefully refrain from adding the name of the genus in question. The indexes to the various *Journals of Botany* issued under Sir W. J. Hooker's direction have become proverbial for their inadequacy, but it may be doubted whether those of the *Annals of Botany* do not surpass them in this particular.

The *Orchid Review* errs in an opposite direction. It gives an excellent index of species and subjects, extending over seven pages, but entirely omits the names of contributors. It is often necessary to look up the writings of some author, but it is not possible to ascertain this from the *Orchid Review*, save at the cost of wading through the entire volume.

As an example of the inconvenience arising from a classified index, the *Gardeners' Chronicle* may be cited. I have been told, we will say, that in the first volume for 1893 there is a note on "dimorphic Aralias." I look in the index for "Aralia" and "dimorphic," and fail to find either. How am I to guess that snugly hidden away under the heading "Scientific Committee" I

shall find "Dimorphic Aralias, 426"? The very heading is misleading, for the "Scientific Committee" is that of the Royal Horticultural Society, and should appear under that heading, from which, however, it is entirely omitted! Classified headings are only tolerable when the entries under them are also placed under their own names, and when an indication of the classified articles is given at the head of the index.

The *Garden* is more satisfactory in this respect. By the use of italics, it is found easy to include the illustrations (which have a separate index in the *Gardeners' Chronicle*), and the subjects are not classified, so that each can readily be found by referring to the one table. But in both these important papers the names of contributors find no place in the index!

In the *Journal of the Royal Horticultural Society* (xv. 1893), the authors are nowhere indexed, and it is impossible to find them save by going through the table of contents. The index is very meagre, and there is no correlation of entries: for example, we have

"Aster, the genus, 4."
"Asters, conference on, 1."
"Michaelmas Daisies, 13, 229."
" " list of, 239."

These should have been brought together under the headings "Aster" and "Michaelmas Daisies." Mr. Dewar's useful key to Sunflowers should also have appeared under *Helianthus*, and so on.

The Bulletin of Miscellaneous Information (1893) is curiously indexed. The incidental mention of three species of *Rhyncophorus* is entered, but the detailed descriptions and plate are omitted. Such curious entries as "Principal Assistant (Cryptogams)"; "New World, coffee cultivation in"; "Colonial Botanist, Queensland": and many more of the kind, indicate that the compiler has not realised the first essential of an index-maker—the knowing what folk are likely to look for. Margaret Meen, the botanical artist, is entered under her Christian name only. But, most astonishing of all, the numerous new species published in the *Bulletin* find no entry in the index, the only indication of their existence being under the heading "Decades Kewenses": while forty new orchids are lumped together under "New," no reference being made even under "Orchids"! This is the more remarkable, as a number of references to common plants are given at length—a note on Buckwheat, for example, is entered three times under that word, three times under *Fagopyrum*, and once under Kangra Buckwheat.

Incomparably the worst index I have ever seen, however, is that to *Grevillea*, vol. xxi., to the startling peculiarities of which attention was called in this Journal last year (p. 224). As a literary curiosity in other respects, this magazine stands high. Did any other, I wonder, ever end a number with an unfinished sentence—thus:—

"present state of mycological knowledge, the classification"

and, *six months afterwards*, continue the same without a word of introduction by beginning

"and the description of the species of North American Pyrenomycetes"!

This astounding performance will be found in *Grevillea* for Sept. 1893, p. 32, and March, 1894, p. 65.

I gladly admit that the index to vol. xxii. is many degrees less ridiculous than that which preceded it, but it is still susceptible of considerable improvement. I cannot decide—nor am I told—why certain names of species are printed in italic and others in roman; nor why, when we come to "Original Articles," indexed by themselves and only under the names of their authors, some of the latter are in capitals. The want of method is, indeed, as conspicuous as ever. Under "Bibliography," a number of publications are noticed. There is no list of these in the index, nor is it possible to discover, save by wading through the volume, what have been noticed. The name of an author, *tout court*, which might stand either for a contribution by him, a reference, or a personal notice, usually means that a work from his pen has been reviewed at the page indicated; a mode of reference which is both unusual and inconvenient. But here again are careless omissions—thus, Dr. Braithwaite's *Moss Flora*, Mr. Wilkinson's *Isle of Man Lichens*, Rev. A. K. Nairne's *Flowering Plants of Western India* (!),—apropos of which the editor says, "Although not dealing with Cryptogams, we are always glad to welcome any attempt to popularise the study of botany"—and others, are in no way referred to in the index, which is in other particulars imperfect.

It would be easy to multiply examples and to deal with the matter at greater length, but enough has been said to show the necessity of something like a common principle in index-making. It seems to me that the adoption of the following suggestions would tend to greater uniformity and usefulness than exist at present:—

1. All entries to be in one alphabet.
2. Subjects under class headings to be also indexed separately.
3. Under the names of authors their contributions should be briefly indicated: in the cases of books reviewed these should be entered under the authors' names, as well as under such other heads as may be convenient.

JAMES BRITTEN.

LEDUM PALUSTRE L. IN SCOTLAND.

BY ARTHUR BENNETT, F.L.S.

THIS plant was reported many years ago as a native of Ireland, where Sir C. Giesecké was said to have taken a specimen from the hat of a fisherman in the neighbourhood of Achill Head (see Hooker's *Flora Londinensis*, t. 212).* This record has been generally regarded

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* ["This highly interesting plant . . . has lately been detected by Sir Charles Giesecké, Professor of Mineralogy in the University of Dublin, on the north-west coast of Ireland, where it seems to be a denizen colony with the *Papaver nudicaule:* for, in the immediate neighbourhood of the station for that plant, namely, Achill Head, Professor Giesecké took the specimen here figured, in a fresh state, from the hat of a fisherman. The fact of the plant growing amongst the wild islands of that coast cannot be doubted."—*Flora Londinensis,*

as erroneous, and I do not think there was any mention of its occurrence in Britain until in the *Trans. Bot. Soc. Edinburgh*, vi. p. 137 (1860), where it is said to have been known for many years to exist in small quantity in a bog near the Bridge of Allan.

My attention was called to the plant by Mr. N. E. Brown, who showed me specimens received from a moss in Perthshire, and gave me the address of Miss N. Geddes, who had sent them to Sir J. D. Hooker. I at once wrote to her, and she kindly sent me specimens and particulars of its occurrence. In her letter to Mr. Brown she observes:—"There would be twenty or thirty plants scattered through the bog, which is situated in one of the wildest straths of Scotland"; also that "no one ever planted it there, as some of the old residents remember seeing the same plant some thirty years ago growing in the bog, but took no particular notice of it. There have been numerous roots of the *Ledum* sent to Ireland and England, and there are still a few plants left; the bog being gradually reclaimed. There are a good many plants of the *Ledum* in (another) bog a few miles distant from the first-named bog. How the seeds got there it is difficult to say, as it is far from any habitation."

On this I wrote to Dr. Buchanan White, and he referred me to a notice in *Trans. Bot. Soc. Edinburgh*, xiii. p. xxiii. (1877), where it is thus recorded:—"Dr. Paterson exhibited a large plant of *Ledum latifolium*, which he had found in a natural moss near the Bridge of Allan. He had first discovered it growing there abundantly about thirty years ago. Mr. A. Buchan stated that he had met with it in the same locality more than twenty years ago, and [it] was then in full flower." The plant is certainly not *L. latifolium*, but good typical *palustre*.

I then wrote to Dr. Paterson, who wrote that he had discovered it about forty years ago (about 1847), while taking a walk (geological) with the late Principal Forbes of St. Andrews; "since that time I have sent plants of it to the Royal Botanical Gardens at Kew, Edinburgh, and Dublin. Although *L. palustre* is still (Oct., 1887) growing in a wild state in the small remaining part of the moss, it is not generally believed by botanists to be native."

In July, 1888, I directed a friend to the plant, and he found it, and sent specimens; these were in flower and partly-formed fruit; he described the situation as very wild.

As the plant has survived for nearly fifty years (certain), it seems curious that no mention of it has been more generally made (so far as I can discover), as this is not the case of a survival from a one-year's rubbish heap. Its European distribution is Norway, Finland, Sweden, Russia (north and middle), N. Germany, Thuringia, Bavaria, Austria, Servia, with a sub-sp. in Arctic Russia and Iceland. Whatever its real origin may have been, it is interesting to find it maintaining its ground so long.

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vol. v., t. 212 (1828). Giesecké was at Achill Head in October, 1825, and an account of his "mineralogical excursion" is published in *The Annals of Philosophy* xxvii. (n.s. xi.), 271—276 (1826). It contains no references to plants.—Ed. Journ. Bot.]

LINNAEA OR OBOLARIA?

By Otto Kuntze.

In that Journal of Botany 1894 p. 25–29 Mr. Daydon Jackson gives a review of my *Revisio generum plantarum* III[1]. I made in my Rev. g. pl. III so heavy reproaches in regard to his treatment of his nomenclature that this report by no means can claim impartiality. Indeed his opinion is often one-sided, as every body may convince himself who reads my book partly written in English. In particular I wish to raise protest against Mr. Jackson's insinuations, that I desired to minimise my indebtness to Kew and to its Msc. Index, and that all my bibliographical help obtained were derived from the British Museum at Bloomsbury. I have shown in the preface of my Rev. g. pl. I. p. vi–vii according to truth, how much I am indebted to Kew and the Msc. Index, but I have also shown that I used that Index only for the determination of my plants and only as long (spring of 1889) as Mr. Jackson commenced to add the dates of the genera-names in that Index; for my Rev. gen. pl. proper, except the determination of plants, I have neither used nor required help from the Kew staff and the Kew Index Msc. On the contrary I gave some times to Mr. Jackson information as desired by him since I was far ahead of his revision of genera-names. See also my Rev. gen. pl. p. 97, in which it appears that a copy of Tropaeolum out of the Msc. Index applied by Mr. Jackson and obtained for Professor Buchenau in October 1889 contains a great lack in genera-synonyms.—I used only as auxiliary the British Museum libraries; Mr. Jackson's inferring as to this point is merely arbitrary.

2[b]. I have to protest against what he writes as follows: Dr. Kuntze's "statement that Linnaeus was 'contemptuous' enough to change Siegesbeck's *Obolaria* into his *Linnaea is utterly wrong;* the genus *Linnaea* was founded by Gronovius in the first edition of the *Genera*, which came out early in 1737, whilst in October of the same year Linnaeus was writing to Haller about the rumour that Siegesbeck's *Hortus Petropolitanus* was published, but was sorry to say that he had not yet seen it; *Amman sent the book itself to Linnaeus in January 1738.* The latest charge against Linnaeus is therefore clumsy, as well as false." This refers to my note No. 25[b] at the foot of p. clxxxix in Rev. gen. pl. III; I wrote:

"Why shall be *Obolaria* Sieg. an apparently contemptuous name against *Linnaea?* Mr. D. Jackson had apparently forgotten that Siegesbeck's *Obolaria* was published in 1736 before the *Linnaea* of Linnaeus in 1737 was established. On the contrary Linnaeus was 'contemptuous' by changing Siegesbeck's *Obolaria* into *Linnaea* and naming another genus *Obolaria*. In 1736 Siegesbeck was not yet an opponent to Linnaeus, as Mr. Jackson wrote wrongly on the other page."

I wish now clearly to state:

I. That Gronovius is not responsible for the establishment of the genus *Linnaea;* for only Linnaeus established in his works the

genus *Linnaea* by diagnosis, synonyms and illustration. Gronovius is merely the pretended inventor of the name.

II. Linnaeus wrote in his folio work *Hortus Cliffortianus*, of which in August 1737 already 400 pages were printed (see Corresp. of Linn. ii 270; O. Ktze. Rev. gen. pl. p. cxxxiv) and which work is quoted as far back as early in 1737 as manuscript by Linnaeus himself in his *Genera Plantarum:*

II[a], in the introduction, Classis v, No. 60: "Siegesbeck. Fo. Georg, Majanthemum, Lilium convallium affinis. Petropoli 1736, 4to, p. 15." Linnaeus acknowledges thereby to have been in receipt of one of the 2 different papers of Siegesbeck published in 1736. And he should not have received the other one?

II[b], pag. 320. "*Linnaea* gen. pl. 523 . . ." (among the synonyms:) ". . . *Obularia* . . . Sieg. hort. . . ." (and at the end of the description:) ". . . *Obularia* nobis longe diversissima est planta."

II[c], pag. 323. "*Obularia* . . ."

II[d], pag. 412. "*Sigesbeckia* g. pl. 882 . . . " (synonyma, descriptio) "Dixi plantam in honorem Fo. Georgii Siegesbeck, in Horto Medico Petropolitano Botanices Professoris, qui quanto ardore Floram Ruthenicam prosequitur ostendit abunde *Catalogus Horti Petropolitani.*" The full title of that work of Siegesbeck quoted here by Linnaeus is: "*Primitiae Florae Petropolitanae*, sive *Catalogus plantarum* tam indigenarum quam exoticarum, quibus instructus fuit *hortus* medicus *Petriburgensis* praesenti anno 1736. Rigae 1736."

III. Amman did not send that book in question (Siegesbeck, *Cat. hort. petr.*) to Linnaeus in January 1738, as Mr. Jackson wrote wrongly. The book sent by Amman in January 1738 at the request of Linnaeus was "the critical dissertation of the works of Linnaeus he had hitherto published" of which Amman gave notice him in his letter of 15th of November 1737 (see Corresp. of Linn. ii 195, 196). The correct title is: *Epicrisis systematis Linnaei* which is attached to Siegesbeck's *Botanosophiae* . . . 1737.

IV. Linnaeus denied still in a letter to Haller of Sept. 1739 to have ever seen the *Primitiae Florae Petr.* of Siegesbeck (*l. c.* ii 338). Notwithstanding Mr. Jackson thinks that Linnaeus had got it in January 1738. On the other hand Amman's letter to Linnaeus shows that Linnaeus did not inquire after that book published in 1736, although it would have been a most easy matter for him to obtain with the other shipment in 1738 the book which he pretended not to have seen at all.

V. *Linnaeus'* denying to have seen the *Primitiae* . . . = *Catalogus* . . . of Siegesbeck (*l. c.* 300 and 338) is also in contradiction with his own previous quotation of the said work in his *Hortus Cliffortianus* written late in 1736 or early in 1737 (see above II[d.]).

VI. Even if Linnaeus should not have seen that work in question he knew the name *Obolaria* Sieg. (perhaps from labels of plants forwarded by Siegesbeck to Cliffort's garden, as is it mentioned on the second page of the preface of his *Hortus Cliffortianus*) for Linnaeus expressly quotes *Obolaria* Sieg. to his *Linnaea* in the same time (see II).

We may consider the matter from whatever point of view it must be inferred that *Linnaeus* had changed *Obolaria* Sieg. into his *Linnaea*. Thus, I think, Mr. Jackson's statements have been proven to be fallacies.—If we take the year 1735 as starting-point *Obolaria* Sieg. must be preferred; but in case of 1737 as starting-point *Linnaea* L. ought to be valid.

In conclusion I wish to protest that it be a "Kuntzean fable"—as Mr. Jackson wrote *l. c.* p. 27:—Mr. Jackson having effected an entire change of front since my Revisio gen. pl. in 1891 came on the scene. What Mr. Jackson quotes for "demolishing this fable" proves only and shows very correctly that Mr. Jackson was willing to commence his nomenclature with 1735 and that from and after 1753 he would let in application only a different orthography, if any. But after the publication of my Revisio gen. pl. in 1891 he has disowned his former starting-point of 1735 and called the same now "Dr. Kuntze's *arbitrary* starting-point" (see J. of Bot. 1892 p. 57 and my notices No. 5 and 21 of my Rev. III) willing just as Mr. Hemsley (see Nature 24th Dec. 1891 p. 172 . . .) to commence with 1753 and hoping that 4/5 of all my proposed names would fall by his changing of the starting-point of nomenclature into 1753. Later on after I had proved this to be a mistake, he finished the Kew Index in accordance with his former plan, without applying, however, the *lex prioritatis* even in cases free from doubt, as, to be sure, he promised it formerly. For he wrote in Journ. Bot. 1887 p. 68: "But whilst strenuously advocating *strict priority as the only sure foundation for nomenclature*, it can only be applied when free from doubt." Why gave Mr. Jackson figures at all of year-numbers of first publication to the names when he did not make the slightest use of such dates now?

Mr. Jackson and Mr. Hemsley have misled the majority of botanists to commence the nomenclature with the inept starting-point of 1753, for instance in the case of the circular quotation arranged by the Berlin Committee, in voting at the Genoa Congress and at the Rochester Meeting. This is an historical fact which to prove I preferred full evidence in my Rev. gen. pl. III. How inept it is to commence with 1753 and how advantageous it is to begin with 1737 I have demonstrated in figures. The reason of the profitable starting-point of 1737 is that most of authors went back to *Linnaeus' Genera pl.* of 1737 in regard to genera-names, but only exceptionally made use of 1753 heretofore. In commencing with 1753 at least 93 genera and 6886 species would have to receive new names. The list which I have published in that respect (Rev. gen. pl. III p. ccclxxiii–vi) has in the mean time become considerably larger. If to Mr. Jackson it seems paradoxical that *less* alterations will be occasioned by 1737 than by 1753 what hardly will persuade anyone (J. Bot. 1894 p. 28), then I dare say this is light and wrong. On the other hand my opponent Dr. John Briquet wrote on these ciphers, which I published on the consequences of changing the starting-point, in Bulletin de l'herbier Boissier 1894 p. 54: "Ces chiffres sont éloquents et nous pouvons assurer que les dérangements signalés par Mr. Kuntze pour l'adoption de la date du

congrés (1753) sont en général corrects et n'ont pas été exagérés pour les besoins de la cause"; and p. 55: "Nous nous mettrons franchement du côté de Mr. Kuntze et de l'ancienne proposition d'Alph. de Candolle pour réclamer l'année 1737 comme point de départ de la nomenclature générique."

Many American and other botanists were willing to use the Kew Index, as they thought it to contain the year 1753 as starting-point, which, however, turns out to be not; for the Kew Index has no fixed starting-point at all, which might have been used for any competition of names.

On p. 28 Mr. Jackson writes as to me: "Although he never saw Darwin, yet he professes to know his wishes better than Sir Joseph Hooker." I know the wishes of Mr. Darwin by Mr. Jackson himself; see Journ. of Bot. 1887 p. 67, where he wrote "that it was the wish of Mr. Darwin to produce a modernised Steudel's Nomenclator." The most condemnable and really unscientific deviation from Steudel's Nomenclator is, that Hooker and Jackson omitted the specific synonyms at their proper place: under the valid name of each species.

For an exhaustive censure of Mr. Jackson's review would here not be the place.

By the courtesy of the Editor I have been enabled to see the foregoing before publication. Although naturally reluctant to engage in anything which savours of personality, the statements of Dr. Kuntze are such that it might be supposed that I approved them if I remained silent.

Dr. Kuntze had the freest access to the MS. Index, as he acknowledged in his former work: he used it constantly, and the date when he had obtained all the information he wanted from it matters nothing; his work would have assumed a very different complexion but for our accumulated material. He has the bad taste to allude to the case of *Tropæolum;* that copy was furnished at his request from our unrevised entries, on the express stipulation that I should be in return furnished with additions and corrections, but Dr. Kuntze has failed to fulfil his part of the contract. I knew perfectly his relative use of the London libraries, but his note on page cxci needed explanation.

With regard to the *Obolaria* question, Dr. Kuntze allows his animosity to get the better of his reason. Having a strong dislike to Linnæus, as shown in his *Revisio*, he now seeks to convict him of deliberately suppressing Siegesbeck's genera, and founding his own on them. It is a fact that all system-mongers of the seventeenth and eighteenth centuries thought nothing of renaming genera and species, just as at the present day almost every German professor has his own scheme of plant-arrangement. I have already commented on the stupidity of judging Linnæus by the standard of to-day, but some minds are invincibly prejudiced, and to these it may seem right to foist into one man's system the ideas of his opponent. I venture to think that Linnæus scarcely needs even this defence, as will be seen from the following.

Linnæus brought with him to the Netherlands a large amount of literary material; the *Flora Lapponica*, his *Systema*, and his *Genera* were practically ready for publication. His *Systema* came out in December, 1735, his *Bibliotheca* is dated 1736, the *Genera* was issued early in 1737, and his *Flora Lapponica* has the preface dated "xii. Kal. Febr. 1737," that is, January 21st, while the *Hortus Cliffortianus* was also passing through the press. It was quite impossible for Linnæus to have drawn up all these works in the short time since he arrived in the Netherlands. In his *Flora Lapponica*, p. 206, he speaks of "planta nostra" which is described on the next page, and he continues, "Characterem huius generis dedit *Clariss.* Botanicus D. D. *Gronovius* in Characteribus nostris Genericis § 523, ab omni partem perfectum (qui eandem ex Alpibus Italicis habuit), cum ista Buxbaumii descriptia minus quadret." In the face of this positive declaration Dr. Kuntze has the hardihood to assert that Gronovius was not the author of the genus; it is by no means the first time that the doctor has claimed to know more than the author.

It seems clear that Linnæus had not then seen Siegesbeck's *Primitiæ*, his own words as printed in his Correspondence being:—"... I hear that Siegesbeck's *Hortus Petropolitanus* and Gerber's *Flora Moschoviensis* are come out, but I am sorry to say that I have never yet seen them."—Linnæus to Haller, Oct. 8th, 1737.

By every unbiassed mind these words will be accepted as truthful; but Dr. Kuntze declines to credit them. There are, however, some trifling facts which bear out Linnæus's assertions. In his *Hortus Cliffortianus*, p. 320, he adds to the synonymy of his *Linnæa*, "Obularia. . . . *Sieg. Hort.*," this form of abbreviation he seems to have used till about 1745, when in the *Flora Suecica*, p. 189, he says, "Obolaria. *Sieg. prim.* 79." It will be noticed that Linnæus made two mistakes in his first citation, mispelling the name, and not knowing the precise title of the work mentioned, this being of course before he saw the book, but so soon as the volume reached his hands, he was enabled to give a true reference. I was probably wrong in supposing that Linnæus received *all* of Siegesbeck's works in January, 1738, for as the *Primitiæ* is not specifically mentioned, it may be that it did not then reach him, but if not then, it must have been at some later date, which Dr. Kuntze certainly did not intend to prove.

Dr. Kuntze devotes the latter part of his note to a reiteration of some of those statements which I have shown already to be untrue. I do not gather that he includes me in the same class as Linnæus as being unworthy of belief, he must therefore have failed to understand the question, and I will give the substance of my twice printed paragraph in different language.

The *Index Kewensis* starts from the time of Linnæus, therefore no direct mention is made of earlier authors: Tournefort, Plumier, Vaillant, and many others, are cited only through the works of Linnæus or later authors, from 1735 downwards. To me this constitutes a very definite starting-point. As the Linnean work is the very foundation of modern botany, it was imperative to take the

system as a whole, and not force it to include scraps from opposing systems. Naturally then, Linnæus's views have been accorded a respectful treatment, and as I have repeatedly shown, the Index recognises those names as valid which received the final approval of the father of modern nomenclature in his *Species Plantarum* in 1753. This was set out in this Journal in 1887, pp. 67, 68, before Dr. Kuntze saw the Kew MS.

The names which were tentatively used by Linnæus in his earlier works, were only vitalised by his ultimate revision of them in the *Species Plantarum*. This according to Dr. Kuntze is no fixed point; opinions may differ, but our view is perfectly comprehensible to most people, and has the advantage of producing a sounder nomenclature than the collection of sweepings from all sorts of systems which Dr. Kuntze offers in its place. In reply to his reiterated charges of change of plan after his *Revisio* came out, I can only give it a point blank denial. Dr. Kuntze flatters himself too grossly; his *Revisio* only reached me on November 14th, three months after the first part of the *Index Kewensis* had gone to press (September 15th); it was therefore a physical impossibility for me to have made those fundamental changes in the plan which he avers were made after his work had given me the idea. I am in no sense responsible for any mistakes which the doctor's defective hearing may have caused; indeed, he knows better himself, as witness his own words:—"The Kew index of plant names . . . planned at first as a continuation of Steudel's *Nomenclator*, now in preparation since 9 years under the responsibility and direction of Sir Joseph Hooker, will not be now a work like Steudel's *Nomenclator*, but a faithful index of the names of phanerogams."—*Revisio*, p. cxlvi (1891). Within three years of beginning, it was seen that to attempt giving synonyms as Steudel did, would, from its appalling bulk, ensure the collapse of the work. This was good reason enough, but I may add more. The citation of synonyms under the right names presupposes that every plant is already in possession of its right name; this is easy in the Steudelian method, for a name is coined on the instant for any transfer, and the thing is done. No such presumption formed part of our plan; thousands of plants are still awaiting their true nomenclature at the hands of competent monographers working with the plants themselves. Believing, as I do, that the plan adopted will meet with the approval of the majority of botanists, Dr. Kuntze's strictures may be disregarded.

B. Daydon Jackson.

[To avoid possible misunderstanding, Dr. Kuntze's remarks are printed in exact accordance with his MS. and proof. We cannot devote further space to the discussion on the points raised.—Ed. Journ. Bot.]

NOTICES OF BOOKS.

Fossil Plants of the Wealden.

Catalogue of the Mesozoic Plants in the Department of Geology, British Museum (Natural History). The Wealden Flora. Part I. Thallophyta—Pteridophyta. With 11 Plates. By A. C. Seward, M.A., F.G.S., University Lecturer in Botany, Cambridge. London, 1894. 8vo, pp. xxxviii, 179; tt. 11. Price 10s.

The present volume contains a very full account—by no means a mere catalogue—of the British Museum specimens of cryptogamic plants from the Wealden formation. As stated in the preface, the labours of Mr. Rufford, whose fine collection has lately been acquired for the National Museum, have been the primary cause of this Catalogue. It is a matter for congratulation that the investigation of this fossil flora has been undertaken by a botanist such as Mr. Seward, who is skilled in the study of recent plants.

A general review of the Wealden flora will be given in Part ii., when the work is completed. It appears from the Introduction that no distinct remains of Angiosperms are included in the collection, although it seems to have been about at this geological period that the higher Flowering Plants first made their appearance. Their absence is disappointing, and indeed it cannot be said that the specimens generally, so far as they are included in the present volume, throw any great light on important botanical questions. A good many of the fossils described are known only by the external form of some portions of the vegetative organs. Where neither fructification nor internal structure is preserved, fossil specimens have little botanical interest, though of course it is necessary to record them, in hope of future additions to our knowledge. Exception must be made of a genus like *Equisetum*, in which even the vegetative habit may be sufficiently characteristic. The author in all cases enters very fully into the characters of the specimen, and makes as much out of it as can be made.

The Cryptogams in the collection comprise two Algæ, one *Chara*, one Bryophyte, two specimens of uncertain class, three *Equisetaceæ*, and twenty-three Ferns—thirty-two "species" in all. The name "*Algites*" is used for specimens with an alga-like habit, the systematic position of which cannot be more precisely determined. This cautious nomenclature is certainly to be commended. Two such forms are described: one, *A. valdensis*, bears some resemblance to *Chondrus crispus*, but its striking similarity to the liverwort *Reboulia hemispherica* is also pointed out, so that even the algal affinities of the fossil appear to be doubtful. A new species of *Chara*, *C. Knowltoni*, of which only the oogonia are known, is described. The solitary Bryophyte is *Marchantites Zeilleri*, sp. nov. The author is careful to explain that he uses Brongniart's generic name as referring rather to "a type of vegetative body than to a special genus" (p. 18).

Passing on to the Pteridophyta, three species of *Equisetites* are described. *E. Lyelli* Mantell is well known, and is represented by

characteristic portions of stem. *E. Burchardti* Dunkler is interesting from the well-preserved tubers on the rhizome, obviously of the same nature as those of certain recent horsetails. A new species, *E. Yokoyamæ*, is very similar. The constancy of the *Equisetum* type is very remarkable. It now appears that the genus already existed in the Coal-period, side by side with its gigantic relatives the Calamites. Among Ferns referred to the *Polypodiaceæ*, *Onychiopsis Mantelli* is first described. This is the *Sphenopteris Mantelli* of Brongniart. Its resemblance to *Onychium* was first recognised by the Japanese palæobotanist Yokoyama. The specimens are of considerable interest, as well-preserved fertile pinnæ are found on some of the fronds. A rhizome which probably belongs to the same fern is also figured.

The author criticises severely and justly the extraordinary multiplication of species by Fontaine, who describes no less than forty fossil species of *Thyrsopteris*, from sterile fronds or their fragments only. Such a procedure certainly seems calculated to bring fossil Botany into contempt. A new species of *Acrostichopteris*, *A. Ruffordi*, is described, but unfortunately it shows no fructification.

Two genera, referred on good grounds to the *Cyatheaceæ*, are described. *Matonidium Göpperti* (Ett.) shows fertile as well as sterile segments, and in the Berlin specimens the sporangia, which have an oblique annulus, have been discovered. *Protopteris Witteana* Schenk is the stem of a tree-fern, the anatomy of which is sufficiently well preserved to leave no doubt of its affinities. It appears to resemble *Dicksonia* most closely.

A new genus, *Ruffordia*, is founded for the reception of Mantell's *Sphenopteris Phillipsii*, which is placed provisionally in the *Schizaceæ*. Fertile and sterile pinnæ are preserved, and bear a considerable resemblance to those of *Anemia adiantifolia*. The forms are very variable, but Mr. Seward wisely declines to multiply species, and includes them all under *R. Göpperti* (Dunk.).

The remaining ten genera "afford no trustworthy evidence as to their affinities with existing families" (p. 87), and though they include some very fine specimens of fronds (as, for example, *Weichselia Mantelli* (Brong.), figured in Plate X.), they need not be dwelt on here. *Dictyophyllum* was originally described as a Dicotyledon, on account of its reticulate venation. Schenk discovered the sori, and so proved it to be a fern. This is a good illustration (if any were needed) of the small value of external vegetative characters.

The curious fossil *Tempskya Schimperi* Corda (= *Endogenites erosa* Stokes & Webb) is discussed at length, and its true nature seems to be established, though the particular fern to which it belongs remains doubtful. The author sums up his conclusions as follows (p. 158):—"In *Tempskya Schimperi* we have masses of branched diarc fern roots associated with petiole axes, which occasionally afford evidence of branching; probably some forms of *Tempskya* and *Protopteris* are very closely related, if not identical plants; but, so far as English specimens are concerned, there is an absence of any direct proof of such organic connection between

the two fossils as Feistmantel and Velenovsky have previously suggested." The anatomical evidence on which this statement depends is fully given on p. 157.

So far as the imperfect material enables us to judge, it seems probable that the various families of ferns were represented in the Wealden formation much as at the present day. There seems, however, to be as yet a marked absence of evidence for the identification of the *Marattiaceæ*, which played so predominant a part in earlier geological epochs. It may be hoped that further discoveries will throw some light on the position of this family in the Wealden Flora.

Mr. Seward has done his work in a most complete and satisfactory manner, and in the difficult question of species, especially, he seems to have followed a *via media* with great success. The plates, all but one of which were drawn by the Misses Woodward, are admirably executed, and form a most valuable feature of the book. They are supplemented by seventeen woodcuts in the text.

D. H. S.

Experimental Plant Physiology. By Dr. Walter Oels. Translated and edited by D. T. Macdougal. 8vo, pp. x, 86, with 77 illustrations. Morris & Wilson, Minneapolis, Minnesota. 1894.

In the English edition of Dr. Oels' manual Mr. Macdougal has produced a convenient laboratory guide to a series of experiments illustrative of the more important factors in the life of a plant. Primarily designed for use in the summer schools, university extension, and other schools in connection with the University of Minnesota, it will doubtless be welcomed by the teacher or lecturer engaged in connection with similar undertakings elsewhere in America and in Great Britain. The apparatus required to carry out the experiments is comparatively simple, and easily acquired; such physical and chemical apparatus as should be found in any good school or college laboratory being sufficient for nearly all. The use of the term "Photo-synthesis" for the "assimilation of carbon dioxide from the air by the green parts of a plant in sunlight is an innovation. While admitting the necessity for a term to describe this process, we do not think Prof. Conway MacMillan's suggestion the best possible.

The book contains directions for 122 experiments arranged under ten sections, *viz.*, absorption of nutriment, transpiration, photo-synthesis, respiration and metabolism, geotropism, heliotropism, warmth, growth, movement, and relations of plants to animals. The many excellent illustrations will be found most helpful to their performance. The text is clear and well arranged, though misprints are not uncommon, while German-English and sentences which won't analyse occasionally occur.

A. B. R.

ARTICLES IN JOURNALS.

Ann. Scottish Nat. Hist. (July).—A. Bennett, 'Scottish Records for 1893.'—J. Roy & J. P. Bisset, 'Scottish *Desmidieæ*.'

Bot. Centralblatt. (No. 31). — C. Kraus, 'Zweifruchtigen Aehrchen bei der zweizeiligen Gerste.' — (Nos. 32, 33). V. v. Borbás, 'Zur Specifität von *Chlora* und *Erythræa*.' — (Nos. 35, 36). E. Jahn, 'Holz und Mark an den Grenzen der Jahrestriebe' (1 plate).

Bot. Gazette (July 16). — J. D. Smith, New plants from Guatemala. — E. B. Uline & W. L. Bray, 'Synopsis of N. American *Amaranthus*.' — L. M. Underwood, 'The genus *Riccia*.' — W. R. Shaw, '*Pleodorina*, a new genus of *Volvocineæ*' (1 plate). — H. L. Russell, 'Fixation of Nitrogen by plants.'—F. D. Heald, 'Influence of traction on growth of plants.' — I. Clendenin, '*Synchitrium* on *Stellaria media*' (1 plate). — M. Reed, 'Malformation of ovary in *Begonia*.'

Bull. de l'Herb. Boissier (No. 7). — M. Micheli, 'Légumineuses nouvelles de l'Amérique Centrale' (6 plates). — N. Alboff, 'Contributions à la Flore de la Transcaucasie.'—O. Kuntze, 'Nomenclaturstudien.' — A. Kasimir, 'Sur les cristaux chez *Opuntia* et *Pereskia*.' — (No. 8). R. Buser, 'Contributions à la connaissance des Campanulacées' (5 plates: *Feeria*, *Diosphæra*, *Tracheliopsis*, genn. nov.). —T. Lœsener, 'Plantæ Selerianæ' (Mexico: 1 plate).— C. DeCandolle, 'Meliaceæ novæ.'—R. Chodat, 'Race curieuse de *Ranunculus aconitifolius*.'—G. Schweinfurth, 'Sammlung Arabish-Æthiopischen Pflanzen.'

Bull. Soc. Bot. France (xli, pt. 5: July). — G. Rouy, 'Plantes nouvelles pour la flore européenne.' — Arvet Touvet & G. Gautier, '*Hieracium* nouveaux.' — E. Bondier, 'Filaments cirroides chez les Champignons.' — L. Mangin, 'Constitution de la membrane dans quelques Champignons.' — S. Prillieux & —. Delacroix, 'Maladie bacillaire de la Vigne.' — A. Chatin, 'L'hermaphrodisme dans la règne végétal.'—D. Clos, 'De la marche à suivre dans la description des genres.'

Bull. Torrey Bot. Club (July 20).—M. C. McEwen, 'Comparative anatomy of *Corema alba* and *C. Conradii*' (1 plate).—L. N. Johnson, 'New and rare Desmids of U. S.' (1 plate). — L. F. Ward, 'Recent discoveries of Cycadean Trunks in Potomac Formation of Maryland.' J. K. Small, 'Studies in Botany of South-eastern U. S.' (1 plate).— A. Hollick, *Nelumbo Laramiensis*, sp. n. (fossil). — T. C. Porter, 'Varieties of *Solidago* and *Aster*.'— B. D. Halsted, 'Peculiar Range in an autœcious *Uromyces*.'

Erythea (July 2). — E. L. Greene, 'Observations on *Compositæ*.' —Id., 'Novitates Occidentales.' — J. B. Davy, *Achyrodes aureum*.— A. J. McClatchie, 'Flora of Los Angelos County.' — (Aug. 1). P. Dietel, 'New Californian *Uredineæ*.'—M. A. Howe, 'Early History of Hepaticology.' — J. B. Davy, 'Transcripts of descriptions of Californian plants.'

Gardeners' Chronicle (July 28).—W. B. Hemsley, 'R. J. Thornton.' — *Dendrobium M'Gregorii* F. v. Müll. & Kranzl., sp. n.— (Aug. 25). *Scutellaria formosana* N. E. Br., sp. n.

Irish Naturalist (July, Aug.). — W. A. Shoolbred, 'Botanical trip to Co. Antrim.' — (Aug.). R. L. Præger, 'The Seagull Bog, Tullamore.'

Journal de Botanique (July 1, 16). — A. Franchet, 'Les *Cypripedium* de l'Asie centrale et orientale.'—(July 1). E. G. Camus & —. Jeanpert, 'Une œuvre peu connue d'Hippolyte Rodin.' — (July 16). L. Guignard, 'Sur l'origine des sphères directrices.'

BOOK-NOTES, NEWS, &c.

Mr. T. R. Sim sends us a *Sketch and Check-list of the Flora of Kaffraria*, recently published at Cape Town. The title accurately describes the little book of ninety-two pages, the "sketch" occupying seventeen of these, the remainder being filled by the list. The printing of the latter is not very satisfactory; a period is placed between the name and its author—thus, "Senecio lanceus. Ait.," and a considerable number of new species are indicated by *nomina nuda*—names which of course have no claim to recognition, but which will almost certainly give the Jackson of the future a good deal of trouble. Several of Herr Schlechter's new *Asclepiadeæ* are published in this month's Journal; their names in the list appear somewhat odd, being printed thus: "Schizoglossum Flanagani. Schlechter. M. S. S." This criticism as to the publishing of *nomina nuda* applies to Mr. J. Medley Wood's *Preliminary Catalogue of indigenous Natal Plants* (Natal, 1894), which moreover contains a somewhat undue number of typographical errors. In appearance this reminds us of the *London Catalogue*, and the space left in the margin before each name will render the list very useful for marking desiderata and similar purposes. An indication of the altitude of each species is given. When the long-delayed continuation of the *Flora Capensis* is taken up in earnest, lists of this kind will be very useful for reference.

A Folkestone paper gives the following enumeration of the plants met with during the annual excursion of the East Kent Natural History Society:—"The botanical members noticed the bee ovities and the sea blackthorn, whilst growing on the cliffs were brassia nigra, brassia arsensis, in bloom, diplotaxis, nuralis, cardius, lanceolatus, lardius palastris, and plantago coronupus. No great variety of plants were met with, but quantities of one species were remarkable on the cliff, many of the plants growing at inaccessible heights."

Mr. Chas. Curtis has issued a *Catalogue of Penang Plants*, to which Mr. Ridley appends a short notice of "the botanists of Penang." The preface is dated Nov. 1892, but the Catalogue has

only just reached us: it seems to be an extract from some serial publication, but this is not anywhere indicated. The list gives localities and short descriptive notes, and the numbers under which Mr. Curtis has distributed specimens are quoted. We regret to observe the publication of some *nomina nuda*—a growing practice which ought to be discouraged.

On p. 191 we noticed a simple and cheap stand for supporting lenses of different powers; the maker, Andrew H. Baird, of Edinburgh, now sends a dissecting table for use with the above. The table is made of polished sheet-zinc, and has a plate-glass top, which, if dissections under water are required, can be replaced by a metal tank with a glass bottom, which fits into a circular hole in the middle of the table. The price of the whole apparatus, including stands and lenses, is 6s. 6d., post free 7s. We presume that if the whole outfit be purchased at once, the rod of the stands for supporting the lenses will fit the tube inserted in the table for its reception. This, however, is not the case with the one sent by Mr. Baird a month or two ago; a fact which greatly discounts the value of the whole, as it is essential that the lens should be steady. We would also suggest that the openings in the side of the table should be enlarged, in order to let in as much light as possible below the plate-glass or tank. We are pleased with the little tank, which, though somewhat roughly made, is of fair size (4⅓ in. across), and of about the right depth.

Some years ago the *Tablet*, with characteristic accuracy, and a gracefulness of diction peculiarly its own, referred to the Editor of this Journal as "a person who has really such a sphere of modest usefulness open to him as classifying and cataloguing beetles for the nation at South Kensington." It might be well if that paper, which has long been notorious for its typographical blunders, could secure some one to fill the "sphere of modest usefulness open to him" in correcting the press. Its issue for Aug. 18 contains the account of a garden which is adorned with "coleus verscha feltii," "messembryanthemum," "allyssum," "white variegated flowers of spring" (whatever these may be), and "golden harryiover geranium"—the last name, if we mistake not, being that of a garden variety more usually known as "Harry Hieover."

We have received a prospectus of the *Systematic Botany of North America*, which is "designed to present in one work descriptions of all plants growing independent of cultivation in North America, north of Mexico." The "Board of Editors" is composed of eight members, under the chairmanship of Dr. Britton, and the co-operation of most of the North American botanists has been secured. The work will consist of 17 volumes, and will not be issued in regular order, following in this respect Engler & Prantl's *Natürliche Pflanzenfamilien*, which will also be taken as a model for the general sequence of orders. Each monographer will be expected to "conform to a general style, and to principles of nomenclature and citation": it is to be hoped that the "prin-

ciples" will not be as devious as those which have hitherto characterised the work of our transatlantic friends, but that the writers will at least agree among themselves as to the lines to be adopted. The specimen pages received form a monograph of the genus *Riccia*, prepared by Mr. L. M. Underwood, the well-known hepaticologist. After giving preliminary definitions of the natural order *Hepaticæ* and its five suborders, the author proceeds to deal with *Riccia* in particular, draws up a synopsis of the species (which are 19 in number, exclusive of those separated off under *Ricciella* and *Ricciocarpus*), and then briefly and clearly describes each species, appending the habitat and distribution, and referring to the original description (curiously enough under the head of synonymy!), to illustrations and published sets, and (where possible) to the type plant and its place of origin. Six parts are announced for publication during 1895. We look forward with interest to this important work.

Prof. F. W. Oliver's translation of Kerner's important work makes steady progress. The first four numbers have been issued in a "half-volume"—a mode of publication which seems to us somewhat inconvenient, as the index is of course reserved for the whole volume. It has, however, the advantage of presenting the book in a size more convenient for reference, 450 pages being amply sufficient to form a volume. The coloured plates which form so attractive a feature of the original issue are excellently reproduced, and it is certain that *The Natural History of Plants* will take an important place among English botanical textbooks.

Dr. Joseph Bancroft, who died at Brisbane on June 16th, was born in Manchester in 1836, and graduated as M.D. at St. Andrew's in 1859. He practised in Nottingham, but was compelled by ill-health to leave England in 1864, and settled at Brisbane. A naturalist throughout his life, he devoted great attention to economic botany, as well as to researches in medical science. He was the first discoverer of the medicinal properties of *Duboisia myoporoides*, the leaves of which contain a principle now largely used in the ophthalmic surgery. In 1872 Dr. Bancroft investigated the properties of Pituri (another of the Duboisias), the plant used by the aboriginals to chew after the manner of tobacco. He found that the plant contained nicotine in greater quantities than tobacco, the only other plant known to contain it. Numerous other native plants were investigated by him, and some of them he used in his own practice. Among the latter may be mentioned *Alstonia* and *Nesodaphne*, which he found of value. On diseases of plants generally, and particularly of the banana and sugar-cane, he was regarded as an authority. Another of his discoveries was the mode of respiration of shore plants, on which subject he sent a paper to the Royal Society of Edinburgh in 1881. In 1886 he exhibited specimens of Queensland plants at the Colonial and Indian Exhibition, in connection with which he published a small pamphlet—*Contribution to Pharmacy for Queensland*. His death leaves a gap in the ranks of Australian scientists.

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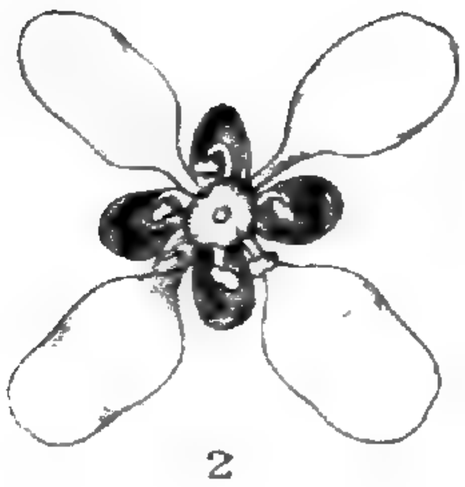

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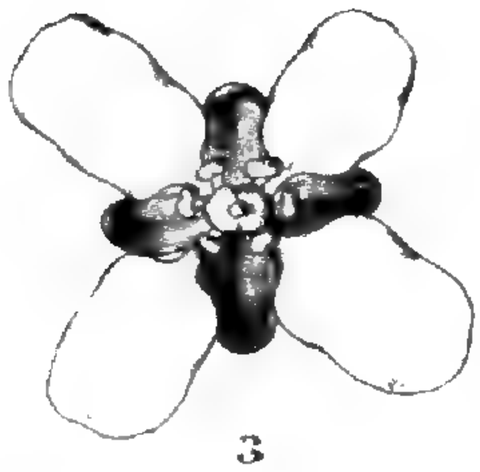

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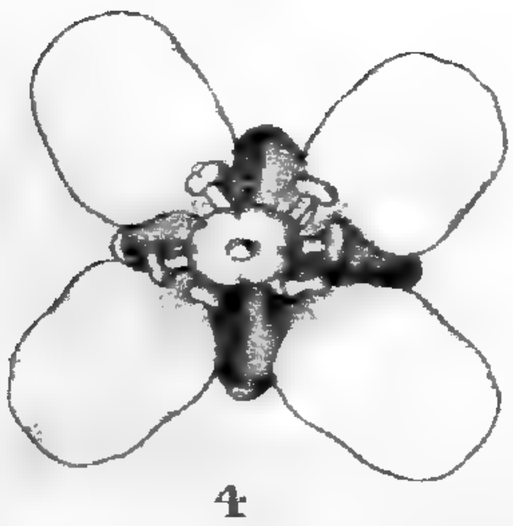

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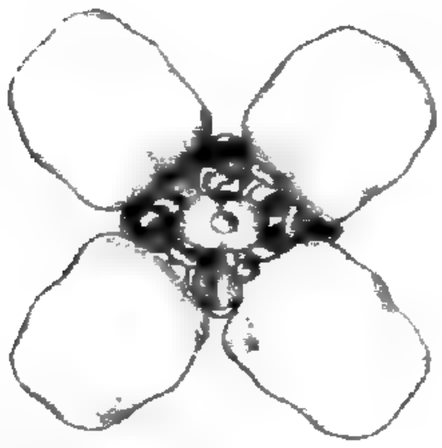

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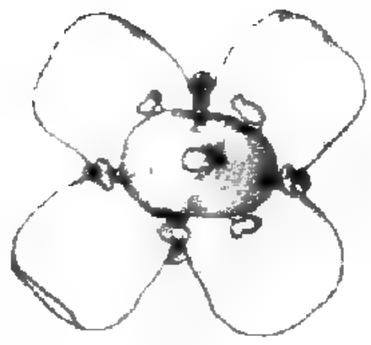

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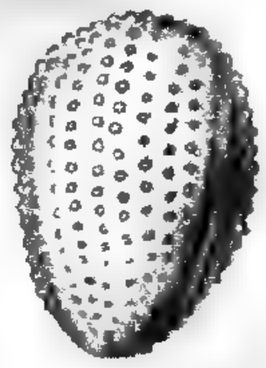

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By the Rev. E. S. Marshall, M.A., F.L.S.

(Plates 345, 346.)

Cochlearia micacea, n. sp. — *Root* perennial, the somewhat thick and woody rootstock usually showing above ground for half an inch or more in adult specimens, scarred with the marks of former leaves. *Foliage* deep glossy green, subcoriaceous. *Root-leaves* of the seedling plant subentire, with a shallow cordate base; those of the flowering plant usually small ($\frac{1}{6}$–$\frac{1}{4}$ in. across), flat or slightly concave, with few and inconspicuous veins, on very slender channelled petioles ($\frac{1}{3}$–1 in. long), orbicular- or somewhat deltoid-reniform, entire or slightly denticulate: in cultivation, especially towards autumn, they are frequently much larger, more angular, the petioles often attaining a length of $2\frac{1}{2}$ in. *Stem-leaves* more or less toothed and angled (as in *C. danica*); lower petioled, often considerably exceeding the root-leaves in size, upper sessile, amplexicaul; auricles small, acute, or none. Very floriferous, in its early stages often forming a dense cushion of blossoms, under cultivation. *Flowering-stems* many, simple or branched, at first short and compact, but quickly elongating, erect or ascending. *Petals* large and showy for the size of the plant, pure white; limb oblong, twice as long as broad, abruptly narrowed into a claw of about half its length. *Sepals* ovate-lanceolate, hooded, subobtuse, externally reddish-tipped, showing very prominently between the petals, owing to their long claw. Fruiting racemes often very long. *Pods* without raised reticulate veins when ripe, narrowed at both ends, varying from broadly ovate-lanceolate to linear-lanceolate, in the longer form often somewhat flattened on the inner surface (so as to appear falcate or "jujube-shaped"), borne on patent or ascending pedicels of about their own length; style distinct, moderately long. Septum not fenestrate. Seeds 2–6 in a pod (usually 4), large, dark brown, broadly ovate, with short, rounded tubercles or rugosities.

Habitat:—Ben Lawers, Perthshire, from 3500 to 3700 ft.; Am Binnein, Perthshire, from 3200 to 3500 ft.; Ben Dothaidh, Argyle, above 3000 ft.

Syn.—*C. conferta* mihi, *in sched.*

I have discarded the name of *conferta*, as being perhaps equally applicable to other species (e. g. *C. alpina* Watson), and have substituted that of *micacea*, since the plant above described has as yet only been detected on micaceous *débris* near the summits of some of the higher Breadalbane hills. In all three stations it grows in company with *Cerastium arcticum* Lange, and may be presumed to belong to a dying-out arctic vegetation.

I have as yet seen no examples in our national herbaria or in those of my friends which seem to be this, with the exception of a plant in H. C. Watson's collection at Kew, among his set of *alpina*,

gathered near the summit of Ben Lawers in 1832, which is probably my *micacea*. A specimen in my friend Mr. J. Cosmo Melvill's set (kindly lent to me), labelled "Cochlearia arctica Schtnd. Lapponia occid., in salsis ad Tromsöe, Jul. 1875. Leg. Reuterman," may perhaps also belong here; but, being in flower only, it cannot be determined with certainty. I may mention that Dr. Focke, who recently saw *micacea* growing in my garden, was reminded by it of a form which he had seen from Finland. Doubtless it will be found in Northern Europe, if searched for.

My own first acquaintance with the subject of this notice was in August, 1887, when I met with it on Ben Lawers, and observed points of difference from our common alpine species. Roots were sent home, and it has been in cultivation ever since. My first impression (endorsed by Prof. Babington), that it was the true *C. groenlandica* L., was shown to be erroneous by the discovery of that littoral plant in E. Ross and W. Sutherland, specimens of which were confirmed by Prof. Lange, of Copenhagen. Two years later, Mr. F. J. Hanbury and myself collected on Am Binnein the striking long-fruited form mentioned above, which has also been grown in my garden. Besides gathering it afresh on Ben Lawers in 1891 (together with a different plant, which deserves further attention), I found it sparingly in 1893 on a hill overlooking Loch Tulla, when in the company of Mr. W. A. Shoolbred.

The extreme difficulty of this variable genus is well known to students, and I should not have ventured to put forward the present plant as distinct, but for its essential constancy when grown for some years under totally changed conditions, and its coming true from seed. Forms of *alpina* Watson, under the same circumstances, remain about equally constant, as do *danica*, *officinalis*, and *groenlandica*. Anyone is, of course, free to take into account only an aggregate "*C. polymorpha*," corresponding to the Benthamic "*Rubus fruticosus*"; but this treatment is hardly calculated to increase knowledge or promote accuracy. If such utterances as Mr. N. E. Brown's crude and offhand dismissal of the *Epilobium* hybrids, in the Supplement to *English Botany*, ed. 3, or Sir J. D. Hooker's laconic condemnation of the Hanburian *Hieracia*, in the popular edition of *Island Life*, are to be taken as really representing the views and teaching of our botanical Gamaliels, it becomes a serious question whether or no "critical" plants are worth studying at all. For my own part, I think that field-botanists have some ground of complaint, when careful and deliberate conclusions, arrived at as the result of prolonged research in the open, the garden, and the study, are hastily tossed aside as worthless, without their properly investigating the matter, by those whose expressions of opinion deservedly carry great weight, and whose reasoned criticisms would be very valuable. This ultra-conservative tendency, while it has doubtless spared us some errors, has hitherto kept our knowledge of British plants from reaching the standard of completeness attained on the Continent.

But to return to *C. micacea*. As it occurs in a wild state, this is a small plant, rarely measuring 6 in. across when in flower and

young fruit, usually 2–3 in. In a garden-border it naturally tends to become more luxuriant; but the dark green, glossy foliage and the perfectly smooth fruits mark it off from all other British members of this family. The differences from *anglica*, *officinalis*, and *groenlandica* are so evident as to scarcely need definition. Dr. Lange, to whom part of the 1891 gathering from Ben Lawers was sent, replied:—"Forsan distincta, ob radicem perennem, sed proxime affinis *C. danicæ*." The points of divergence in living plants are, however, sufficiently obvious. In *micacea* the root-leaves are more entire, coriaceous, ascending; the inflorescence is less terminal, the flowers being very much larger, with a long claw to the petals, the pods smooth when ripe, the seeds much larger and fewer (I have observed as many as twelve in a pod of *danica*).

The only recognised British species with which confusion seems likely to arise is *C. alpina* Watson, which I believe should retain specific (or subspecific) rank. Dried flowering-specimens of the two are not always readily separable; but the living material may be differentiated by the following characters:—Root-leaves of *alpina* larger and coarser, with a deeper basal sinus, light green, more flaccid and thinner, more concave, with more evident veins. Petals more gradually narrowed into a shorter claw, not rarely pinkish. Upper stem-leaves with conspicuous auricles. Sepals light green. Pods reticulate-veined when thoroughly ripe. Stems usually more procumbent.

There remain to be dealt with two smooth-podded boreal species, viz., *C. arctica* Schlecht. and *C. fenestrata* R. Brown. The latter is clearly quite different, somewhat resembling *anglica* in leaf-characters, with its fruits mostly terminal and crowded; seeds small, numerous, much like those of *danica* in appearance. Some of the specimens so labelled at S. Kensington look more like states of *groenlandica* or *arctica*, and can hardly belong to *fenestrata*.

With *C. arctica* (which I have somewhere seen suggested as the true name for a peculiar Ben Lawers form, probably that under consideration) there is, however, much affinity. I have examined the plant of Fries' *Herb. Normale* at Kew, as well as additional specimens from Tromsöe gathered by Th. M. Fries in 1864, and by Læstadius (as "*officinalis* L.") in 1832 and (as "*officinalis* var. *alpestris* Læstad. in herb.") 1833. There are at Brit. Mus. other Finmark examples (from Nyborg and from the shores of the Warengerfjord, collected by Th. Fries and (from Tromsdal) by I. Carroll; so that a fair amount of material has been available. Though individuals, of course, vary somewhat, these evidently belong to one and the same species; and my conclusion is that, although nearly allied to *C. micacea*, they are distinct from it. The pods scarcely seem to differ; but the few seeds which I have seen are decidedly smaller in *arctica*. The stem-leaves are all sessile (except the very lowest on some plants), much longer, narrower, more numerous and regularly scattered up the stem, nearly or quite entire, the root-leaves withering early, generally ovate, gradually narrowed into the petiole; petals small, broadest at the tips, tapering uniformly to their base, instead of being abruptly clawed. The rootstock is more slender, and the general

aspect dissimilar, though it is not easy, especially without having the sheets before one, to put the difference in words. If, however, the description of *C. arctica* in Fries *Mant.* iii. pp. 64–5, be compared with that of *C. micacea* given above, it will be seen that the discrepancies are not inconsiderable.

The single blossoms of several British species so well drawn by Mr. Morgan represent flowers just fully expanded. It should be remembered that in all of them the petals lengthen with age, so as to appear narrower in proportion, and also that individual figures should not be overmuch relied on; allowance has to be made for a certain amount of variation.

EXPLANATION OF PLATES 345 AND 346.

PLATE 345.—*Cochlearia micacea* Marshall.

PLATE 346.—Fig. 1. *C. micacea* Marshall. 2. Flowers of ditto. 3. Flowers of *C. alpina* Watson. 4. Flowers of *C. officinalis* L. 5. Flowers of *C. groenlandica* L. 6. Flowers of *C. danica* L. 7, 8. Fruits of *C. micacea*. 9. Seeds of *C. micacea*.

ON SOME OLD COLLECTIONS OF CHINESE PLANTS.

By E. BRETSCHNEIDER, M.D.

In publishing the following notes in this Journal, my chief design is to bring them before the notice of the older English botanists, contemporary with the botanical collectors referred to, in the hope that some may be able to contribute towards the elucidation of the doubts adhering to these old collections.

It was in about the year 1818 that the Royal Horticultural Society of London (founded in 1804, incorporated in 1809) began to direct their attention to the botanical riches of China, in which country the Society then had two zealous members and correspondents, Mr. John Reeves and Dr. John Livingstone. The former introduced many interesting Chinese ornamental plants into the garden of the Society at Chiswick, and transmitted also herbarium specimens, as his son John Russell Reeves did later. In 1821 the Society sent their gardener, John Potts, to Canton, and two years later they despatched John Damper Parks to the same place. These collectors returned from China with many new and curious living plants and dried specimens. But the most successful among the Society's collectors in China was Robert Fortune, who between 1843 and 1860 visited that country four times.

Most of the plants transmitted to the Horticultural Society by these collectors, especially those cultivated in the Society's garden, were described by Dr. John Lindley, some also by Joseph Sabine, in the *Transactions* and *Journal* of the Society. The herbarium specimens were distributed, and have been subsequently determined by different botanists of England and the Continent.

The two Reeveses and their Chinese collections are frequently confounded by botanists, and even Lindley, who knew them personally and received plants from both of them, does not always take

the trouble to distinguish them, so that the reader of Lindley's accounts of Reevesian plants often remains in doubt whether by "Mr. Reeves" he means the father or the son.

John Reeves (senior) was born at West Ham in 1774. From 1812 to 1831 he lived at Macao and Canton, where he held the post of Inspector of Tea to the East India Company. After his return to England, in 1831, he lived at Clapham, where he died March 22nd, 1856.

His son, John Russell Reeves (junior), was born in 1804. He perhaps accompanied his father when the latter went to China in 1812. He died on May 1st, 1877, at Wimbledon, Surrey. In the obituary notice of him, given in the *Gardeners' Chronicle*, 1877, i. 604 (see also *Journ. Bot.* 1877, 192), he is stated to have lived thirty years in China. I have not been able to ascertain when he returned to England. The *Chinese Repository*, a periodical published since 1833 at Canton, gives from time to time complete lists of European residents in China. In the list for 1837 I find Reeves (Christian name not given) mentioned among the residents in Lintin, an island in the estuary of the Canton River, where in former times European ships trading with Canton used to anchor. Reeves's name does not appear in the next list for 1841. Whether he was then on leave or had left for good cannot be decided.

The *Gardeners' Chronicle*, l. c., attributes to John Russell Reeves, jun., the introduction of *Reevesia thyrsoidea* and *Spiræa Reevesii*. Lindley, however, who in 1827 established the new genus *Reevesia*, clearly states (*Brande's Journ.* n. s. ii. 1827, 112; *Bot. Reg.* t. 1236 (1829)) that dried specimens of the plant had been first sent by Mr. John Reeves to the Horticultural Society, and that he named it in honour of the indefatigable correspondent of the Society then resident at Canton. The *Gardeners' Chronicle* seems to be right in ascribing the introduction of *S. Reevesii* to the younger Reeves. This name appears first in *Bot. Reg.* 1841, Misc. Notes, p. 45, where Lindley speaks of *Spiræa lanceolata*, then cultivated at London, observing that in gardens it is known as *S. Reevesiana*. Afterwards he found that it was different from *S. lanceolata*, and described and figured it in *Bot. Reg.* t. 10, 1844, under the name of *S. Reevesii*, as a Chinese plant "introduced by Mr. Reeves, whose name it bears." Herbarium specimens of *S. lanceolata* were first brought to France by Commerson from Isle de France (Mauritius), where the plant had probably been introduced from China. Poiret first described it in *Encycl. Bot.* vii. 1816, 354. Cambessedes (Monogr. Spiræa, *Ann. Sc. Nat.* 1824, i. 366, t. 25) figured it, and proved that it was identical with Loureiro's *S. cantoniensis*. Loudon (*Arb. et Frut. Brit.* ii. 1838, 732) writes that *S. lanceolata*, a native of the Mauritius and China, had not then been introduced into European gardens. Planchon's statement (*Flore des Serres*, 1856, t. 1097) that *S. Reevesiana*, at first considered to be *S. lanceolata*, was introduced from China into English gardens in 1824, seems to me unfounded. From the above accounts we may conclude that *S. Reevesiana* was introduced by J. R. Reeves, jun., between 1838 and 1841. Mr. Hemsley (*Ind. Fl. Sin.* i. 224) considers *S. Reevesii* to

be identical with *S. lanceolata* and *S. cantoniensis*, the latter being the oldest name of the plant.

The introduction from China of *Canna Reevesii*, which flowered in the Society's garden in 1837, seems likewise to be due to the younger Reeves. Lindley, in *Bot. Reg.* t. 2204 (1837), says:—"Of this most beautiful species of Canna, drawings of which were long since sent to England from China, seeds have been at length procured by Mr. Reeves, to whom we owe so many of the finest plants from China, now in the gardens of England."

In *Trans. Hort. Soc.* n.s. ii. 417–19, Lindley notices the following plants cultivated in the Society's garden, which had been sent from China by Mr. Reeves, between 1832 and 1838:—*Deutzia scabra*, *Acer palmatum*, *Kerria japonica* flor. simpl., *Prunus japonica* flor. simpl., *Dolichos soja*. He evidently means the younger Reeves.

As the name Reeves frequently appears in the *Index Fl. Sin.*, I asked Mr. Hemsley, to whose generous and obliging aid in my investigations regarding old botanical collections I owe much, for information; and he kindly looked up for me a number of Reevesian plants in the Kew Herbarium. He found them all labelled: Mr. John Reeves, or Mr. Reeves, ex herb. Brown; some labelled Canton, some China: no dates.

Presuming that perhaps in the herbarium of the Horticultural Society some new information with respect to the two Reeveses and other collectors for the Society, in China, might be found, I addressed on the subject Mr. James Bateman, whom I believed to have been connected with the old Horticultural Society. This gentleman, notwithstanding his great age, most obligingly answered my letter; but I was disappointed at learning from his communications that nothing deserving the name of an herbarium ever existed in the Horticultural Society, but that Lindley had formed (I understand from the plants transmitted to the Society) an excellent herbarium, chiefly orchids. Thus it would seem that information regarding the two Reeveses may be expected from Lindley's correspondence, which I suppose has not been lost.

Descendants of the Reeveses probably exist in London or other places of Great Britain. Mr. Carruthers, in his Report Bot. Dept. Brit. Mus. for 1877, states that in that year 654 Chinese drawings of plants, executed under the superintendence of the late John Reeves, were presented to the British Museum by Miss Reeves.

T. Alexander.—Sir W. J. Hooker, in enumerating or describing the Filices in Bentham's Florula Hongkongensis, *Kew Journ. Bot.* ix. 1857, pp. 333–44, 353–63, frequently mentions the name of T. Alexander, sometimes styled Dr. Alexander, who is reported there to have collected, chiefly in Chusan, but also in Loochoo Islands, at Foochow, Amoy, in Hong Kong, and at several localities situated on the Chinese coast, as Bullock Bay, Samsa Bay, Tungtan Inlet, Pihqwan Isl., &c. Alexander is first noticed by Hooker in *Kew Journ. Bot.* v. 1853, 236, under *Aspidium podophyllum*, sp. nov., "Chusan," *Dr. Alexander:* time not given. Bentham, *Fl. Hongk.* (1861), preface, 11, mentions T. Alexander, Esq., among the early botanical collectors in the island.

I have little doubt that Alexander's botanical collections are to be referred to the time when the island of Chusan was under British rule, from 1840 to 1846. I may observe that there is in Hooker's *Lond. Journ. Bot.* vii. (1848), 273–78, an article by W. Wilson on the Mosses gathered by T. Anderson, Esq., Surgeon to H.M.S. 'Plover,' on the Chinese coast from Chusan to Hong Kong, Dec. 1845, to March, 1846. Anderson gives for his collection the same localities as noticed by Alexander for his ferns.

Robert Fortune visited China four times. First journey, 1843–46; second journey, 1848–51; third journey, 1853–56; fourth journey, 1860–61.

The number of species of Chinese plants collected by Fortune during these four journeys, and transmitted to the Horticultural Society in a living state or as dried specimens, or also to other horticultural establishments, may be estimated at 450. The herbarium specimens brought home by him from his first visit to China, 1843–46, were distributed by the Horticultural Society to the great botanical institutions in Europe and to some distinguished botanists (I understand gratis). This distribution seems to have taken place in 1847, for already in 1848 Turczaninov, a well-known Russian botanist, described from Fortune's collection the *Saururopsis chinensis* in the *Bull. Soc. Nat. Mosc.* xxi. i. p. 590, and in the same year Fortune's name appears for the first time in DC. *Prodromus*, vol. xii.

Fortune sent also a few herbarium specimens from his other journeys. Comp. Lindley in *Paxt. Flow. Gard.* iii. 107; *Clematis lanuginosa*, gathered in 1850. DC. *Prodr.* xvi. 2, 471; *Cupressus funebris*, discovered by Fortune in 1848. *Bot. Mag.* t. 4499; *Cephalotaxus Fortunei*, 1848. Moore in *Gard. Chron.* 1855, 708; *Drynaria Fortunei*, second journey.

From the statements of various botanists who have described Fortune's plants, and who cite his labels, we can derive some information regarding his interesting collections. The following localities appear on his labels:—China (without locality), Hong Kong, Macao, Canton, Amoy, Chinchew (Chang chou fu, not far from Amoy), Chamoa Island (N.E. of Amoy), Fu chou fu, Chusan, Puto Island (Chusan Archipelago), Shanghai, Hwuy chow (in Am hui), Ning po, Hang chou fu. Sometimes the year is given, 1845, 1846, or even the exact date. A great part of the plants are numbered. There are about ninety plants in Fortune's herbarium which are marked A, with a number. As to the meaning of this designation the botanists do not agree in their views.

Turczaninov, in describing *Saururopsis* (l. c. 1848), cites Fortune A, n. 102, and adds: China borealis.—*Elæodendron Fortunei* Turczaninov in *Bull. Mosc.* 1863, i. 603. Fortune A, 46; China borealis. The late C. Maximowicz, who noticed and described many plants from Fortune's collection, likewise considered A to mean North China, as did also Müller Arg. See DC. *Prod.* xv. 966, sub *Mallotus japonicus* Fortune A, 88; China septentrionalis.

It would seem that the view taken by these botanists that A on Fortune's labels was based upon indications received from the

Horticultural Society (Lindley). Fortune, in the accounts of his travels, understands by North China the provinces of Chekiang (Ning po) and Kiang su (Shanghai), an improper geographical designation, for these provinces are generally reckoned to belong to Mid-China. In DC. *Prodr.* xii. 1848, Bentham, Labiatæ, p. 512, we read: *Lamium chinense* Fortune, A, 83, China; and p. 580, *Teucrium nepetæfolium* Fortune, A, 73, China. Hooker, *Spec. Filicum*, v. 1864, 95, *Polypodium Fortunei* Kunze, writes: Fortune, A, 78, China. From these citations we may conclude that neither Bentham nor Sir W. Hooker were aware of the meaning of Fortune's A.

Mr. Hemsley lately wrote me that his conviction is that A on Fortune's labels invariably means Amoy, as distinguished from his North China, and in the *Index Floræ Sin.*, accordingly, Hemsley refers all plants thus marked to Amoy. I have no doubt that he is right, but nevertheless it would be interesting to have the opinion of other competent botanists on the subject. The greater part of Fortune's Chinese collection was worked up by several distinguished botanists in England and on the Continent during his lifetime. It is therefore surprising that none of the English botanists of London who determined Fortune's plants (Sir W. Hooker, Bentham, &c.) have thought of asking him what he intended to mean by the designation A. Fortune lived in London till 1866, and then retired to Scotland; but he died in London, 13th April, 1880.

Seniavin.—The late C. Maximowicz has recorded, in various volumes of the *Mém. Acad.* and the *Mélanges Biol.*, twelve Chinese plants from a collection in the herbarium of the Bot. Garden, St. Petersburg, which Dr. Fischer, till 1850 Director of that Garden, had received from Seniavin. Time not given:—*Hypericum Seniavini*, sp. nov.; *Mél. Biol.* xi. 169. *Rubus parvifolius* Linn. *l. c.* viii. 392. *Photinia villosa* DC. *l. c.* ix. 176. *Hydrangea hortensis* var. Maxim. *Hydrang.* 14. *H. chinensis*, sp. nov.; ibidem, 7. *Viburnum dilatatum* Thbg. *β. formosanum* Maxim. *Mél. Biol.* x. 666. *Lonicera japonica* Thbg. *l. c.* 56. *Rhododendron Seniavini*, sp. nov.; Maxim. *Rhodod.* 33. *R. ellipticum*, sp. nov.; *Mél. Biol.* xii. 743. *Didymocarpus lanuginosus* Wall. *l. c.* ix. 368. *Premna microphylla* Turcz. *l. c.* xii. 510. *P. japonica* Miq.; Maxim, *Fragm. Fl. Asiæ*, 40. Localities given on the labels: China australis, sometimes China australior. Only the *Rubus* is from China media.

In an old inventory of the various collections preserved in the Bot. Museum of the Bot. Garden, St. Petersburg, Sept. 1856, I found noticed: 9 bundles of Chinese plants collected by Seniavin, and received by Fischer. Now these plants are incorporated with the great herbarium of Eastern Asiatic plants (Japan, Manchuria, Amur, Mongolia, China, Tibet), which is kept apart from the general herbarium, and it is quite impossible to find them out without looking through the whole herbarium.

Seniavin is certainly a Russian name, but considering the time which this collection implies, the view that it was made by a Russian cannot be accepted. In Nov. 1805, the Russian Admiral Krusenstern (who previously had served in the English fleet), on

his circumnavigation of the globe, arrived at Macao with his two ships, the 'Nadejda' and the 'Neva,' and stayed there till February, 1806.* From that time down to 1853 (Admiral Putiatin's embassy to China and Japan), no Russian ship had been seen in the waters of China, and also no Russian traveller is known to have visited Hong Kong, Canton, or any other port of China.†

As I was led to suppose that the botanical collection attributed to Seniavin might have found its way to St. Petersburg through Peking, I asked Professor V. P. Vassiliev whether he was able to give any explanation on the matter. This learned sinologist, who from 1840 to 1850 has lived in Peking with the Russian Ecclesiastical Mission, favoured me with a most convincing conjecture regarding the origin of this interesting collection. He remembers that about 1845 Archimandrite Polycarpos, then at the head of the Mission, despatched an intelligent Chinaman, who was in his service, to the celebrated tea plantations in the province of Fukien to procure specimens of the best tea produced there, and commissioned him also to purchase, on his way back (he travelled evidently overland and by rivers), some ham at Nanking, which place is famed for this article. The Fukien tea, thus received directly, perhaps from the Bohea Hills, western borders of Fukien, the Archimandrite forwarded to St. Petersburg, and offered it as a present to L. G. Seniavin, who from 1838 to 1851 was Director of the Asiatic Department in the Foreign Office. Prof. Vassiliev thinks it very likely that Dr. Tatarinov, the well-known collector of Peking plants, who then likewise lived in Peking, had given instructions to the Chinaman to collect plants in the regions visited, and these plants may have been sent to Seniavin, together with the tea, and were finally forwarded to Fischer.

Shadimirovski (Jadimirovski).—Let me at last notice a curious misapprehension with respect to another collection of Chinese plants, for which Dr. F. von Herder is responsible. This well-known botanist, an authority for Siberian plants, for a long time librarian at the Bot. Garden, St. Petersburg, in the *Botan. Centralblatt*, 1893, p. 2, gives an account of the various herbaria of St. Petersburg. There we read that in the Bot. Museum of the Medico-Chirurgical Academy is kept a collection of Peking plants gathered by Shadimirovski (n. 34). As I had no doubt that a man of this name had never visited Peking, I was curious to inspect this collection. In the said Museum I was shown a bundle of plants

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* To this expedition were attached two naturalists, G. H. v. Langsdorff and W. G. Tilesius, both Germans, and Dr. J. K. Horner, a Swiss, as astronomer. The latter made a collection of Algæ, chiefly in the Japanese and Chinese Seas, which he presented to the celebrated British algologist, Dawson Turner (1775—1858), who described them in his *Fuci*, 1808—19. See in vol. i. 1808, 34: *Fucus Horneri*. Straits of Corea; *Dr. Horner*.

† Admiral E. W. Putiatin spent the month of June, 1853, in the port of Hong Kong, and went also with one of his ships up to Canton. From the middle of November to middle of December his squadron anchored off Saddle Islands, where Dr. H. Weyrich, of the schooner 'Vostock' (the discoverer of the beautiful *Polygonum sachalinense*), gathered some plants. The admiral visited Shanghai.

packed up in strong blue paper as generally used in Russia, and I think also in other countries, for covering sugar-loaves, bearing the stamp (in Russian) of a grocer's shop, the property of Mr. Shadimirovski. But when I opened the bundle, the plants contained in it turned out to belong to Dr. Tatarinov's collection; labels with Tatarinov's handwriting and Fischer's vague determinations. This is the fourth bundle of a complete set of Tatarinov's Peking plants (of which Herder mentions only three), originally presented by the latter to his preceptor and friend, P. Horaninov, who for many years was Professor of Botany at the Medico-Chirurgical Academy. The bulk of Tatarinov's collection was bought by the Imperial Academy of Science in 1857.

Dr. Herder notices also, in the same Bot. Museum, a collection of Peking plants, gathered by Basilevski. I have seen this vast collection, consisting of twenty-one large bundles, which has been handed over to the Museum in 1859, and which bears no traces of ever having been touched upon since Basilevski delivered it. The late C. Maximowicz was not aware of its existence. Dr. S. I. Basilevski from 1849 to 1859 was physician to the Russian Ecclesiastical Mission, Peking. From his labels I see that his plants were collected chiefly among the Peking Mountains, on the Po hua shan, &c.

[Notes on the Foregoing.—Mr. John Weathers, Assistant Secretary of the Royal Horticultural Society, has shown me a "journal" kept by Potts (who died at Chiswick, Oct. 5, 1822) from Jan. 1821 to Jan. 1822, and one by Parks from Aug. 1823 to 1824. Fortune's journals are not to be found at the Royal Horticultural Society, where I have seen some letters from John Reeves in which he speaks of a collection of Chinese drawings sent by him to the Society: these cannot be traced.

I have not found much matter concerning the Reeveses additional to what has been summarised in the *Biographical Index*, the references in which will supply Dr. Bretschneider with some further information concerning him. There are five letters from him in the Banksian correspondence (1812–15) dealing mainly with the varieties of tea in cultivation in China, but incidentally showing that he was a man of general culture and wide interests. After his return from China, he was on the Committee of the Horticultural Society appointed to arrange for Fortune's departure to China; he had previously given valuable advice to Parks as to collecting plants, &c. Besides the Chinese drawings of plants referred to by Dr. Bretschneider, we have in the British Museum (Zoological Department) six folio volumes of Chinese figures of animals, birds, and fishes, executed under Mr. Reeves's superintendence. Dr. Richardson's "Report on the Ichthyology of the Seas of China and Japan" (Brit. Ass. Report, 1845, pp. 187–320) is largely based on the drawings and specimens sent home by Reeves, and his son presented others to the Museum.

The Horticultural Society never had a herbarium. "The valuable collections of dried plants formed by the travellers employed during the last forty years" was sold at Stevens's on Jan. 29, 1856, and we have in the Botanical Department a

copy of the Catalogue, to which is affixed an indication of the purchasers. Fortune's plants were bought by Planchon (for Kew?) for £9 5s. 0d.; Daubeny (Oxford) secured "a small collection formed in the neighbourhood of Macao, by John Reeves," for £1 5s. 0d., and another by Potts for £1 1s. 0d.; Bentham obtained Parks's specimens for £4 10s. 0d., and these will probably be found in the Kew Herbarium.

Dr. Bretschneider's remarks on Alexander and Anderson suggested to me the possibility that these names represented only one person, and this view was confirmed by the fact that in Wilson's herbarium the new species described by him in the paper last referred to are written up as from Alexander. To clear up the matter, I have made enquiries at the Admiralty, and Lord Walter Kerr kindly informs me that the medical officer (assistant-surgeon) of H.M.S. *Plover*—the surveying vessel in the East Indies and China in 1845–6—was William T. Alexander. Anderson therefore disappears.—Ed. Journ. Bot.]

THE BOTANY OF HIGH-CUP NICK, WESTMORELAND.

By J. G. Baker, F.R.S., and E. G. Baker, F.L.S.

High-cup Nick is one of the most remarkable places amongst the mountains of the North of England. It is a lonely mountain glen which opens out on the western side of the great Pennine ridge five miles east of Appleby, and penetrates the ridge for a length of from one to two miles. The upper part is girdled on each side by a long range of basaltic cliffs, so steep that it is only possible to climb them in a few places. This basalt, like that of Teesdale, is intercalated in the midst of the carboniferous limestone, which is the prevalent rock of the surrounding ridges and slopes. The stream that rises on the plateau at the head of the glen, and runs down between the crags, is a branch of the Eden, and from the hills there is a fine view across the Eden valley of the Lake mountains from Saddleback to Shap Fell, High Street, and Wild Boar Fell. The head of High-cup Nick is only a short distance across a low ridge from a curve of Maizebeck, the stream which flows into the Tees just below the Caldron Snout, one branch of which forms for some distance the boundary between Westmoreland and North Yorkshire. Along the foot of the steep hill-escarpment facing west, runs the great Pennine Fault, by which the new red sandstone is brought into immediate proximity with the older beds of the carboniferous limestone, the millstone grit, coal measures and magnesian limestone being entirely lost at the surface.

Very little has been placed on record about the botany of this part of the Pennine range. Mr. Leach and Miss Heelis, of Appleby, have worked it, and the former has recently written a paper in the *Naturalist* on the plants of the whole Appleby district, which it is

to be hoped he will expand, when their investigations have been extended, into a flora of the whole county, which it would be very interesting to have. Our present notes are confined to High-cup Nick and the gill below it, and the neighbouring hills. Through the kind introduction of Canon Matthews, the Vicar of Appleby, we were enabled to obtain a lodging at Keisley, which consists of three farmhouses which stand at an elevation of 800–900 ft. above sea-level, on the side of the hill, overlooking the High-cup stream just where it emerges from the hills. The district included does not go down below 600 ft., and rises to 2000–2100 ft. We looked out specially for the Teesdale rarities, with what success the following list will show. The upper limit of Watson's Mid-agrarian zone may be taken here, as elsewhere in the North of England, at 1000 ft. Here, as at the Lakes, there are no houses, and no cultivated fields above the Mid-agrarian zone. Above 1000 ft. also there are no continuous woods, only scattered hawthorn, rowans, and ash trees on the cliffs or grassy hill-slopes, so that the Super-agrarian zone has an abnormally small flora. It is quite different in North Yorkshire and Durham, where there are farmhouses up to 1800–2000 ft., and often woods at the bottom of the ghylls. On the hilltops above 2000 ft. the flora is very limited. There are only *Rubus Chamæmorus*, *Vaccinium Vitis-idæa*, *Empetrum nigrum*, and a few of the common moorland species.

In the following list we have enumerated all the plants we saw. For those that do not ascend above 1000 ft. no elevation is given. The top of the basaltic crags in High-cup Nick we estimated at 1500 ft., and the stream in the upper part of the glen may be taken at 1200 ft.; and where it breaks quite free from the hill, just below our farmhouse, at 750 ft. But it must be borne in mind that, owing to the special circumstances of the case, a large proportion of the ascending elevations must be considered as quite abnormal, and that many of the common Mid-agrarian weeds and wild plants of the lower levels, e. g., *Lamium album*, the Poppies, *Sisymbrium officinale*, *Rubus rusticanus*, *Ballota nigra*, *Scrophularia aquatica*, *Arundo Phragmites*, *Eupatorium cannabinum*, do not reach up so high as the district here dealt with.

Mr. F. J. Hanbury has been good enough to look through the *Hieracia*, and the Rev. E. S. Marshall has kindly given us his opinion on some of the *Epilobia*. We have to return our best thanks to both of these gentlemen.

Thalictrum alpinum. Hilly slopes beyond the head of High-cup Nick, 500–600 yds. — *T. montanum*. Dry limestone cliffs over Keisley and towards Dufton, and on the spur of the hill between High-cup Nick and Middle Tongue Ghyll, 400–500 yds. — *Ranunculus peltatus*. Pond on the ridge above Keisley, 300–350 yds.— *R. hederaceus*. Swamp above Harbour Flats.— *R. acris*, *repens*, and *Flammula*. Common, ascending to 500 yds. — *Caltha palustris*. Common in swamp up to 500 yds.; the var. *minor* at the bottom of High-cup Nick. — *Trollius europæus*. Swamp by the High-cup stream below Harbour Flats.

Meconopsis cambrica. Keisley, doubtfully indigenous.—*Fumaria Boræi.* Turnip-field at Dufton.

Brassica Rapa.— *Cardamine pratensis.*—Swamps up to 500 yds. — *C. hirsuta.* — *C. sylvatica.* Ascending to 500 yds.; also damp walls at Dufton. — *Arabis thaliana.* Frequent on wall-tops. — *A. hirsuta.* Limestone cliffs up to 500 yds. — *Cochlearia alpina.* Common in the hill streams in and around the High-cup Hollow, 400–500 yds. — *Nasturtium officinale.* — *Draba verna.* — *D. incana.* Limestone and basaltic cliffs of High-cup Nick, &c., 400–500 yds.— *Capsella Bursa-pastoris.* — The Backhouses gathered *Thlaspi alpestre* also at High-cup Nick (see *Phytologist*, i. p. 894).

Helianthemum vulgare. Limestone cliffs, frequent, 300–500 yds.

Viola palustris. Frequent in swamps up to 500 yds.— *V. hirta.* Limestone quarry at Keisley.—*V. sylvatica.* Common up to 500 yds. —*V. lutea.* Grassy hill-sides of High-cup Ghyll, 350–400 yds.

Drosera rotundifolia. Swamps in the lower part of High-cup Ghyll.

Polygala depressa. Grassy slopes up to 500 yds. high up on the basaltic cliffs.

Lychnis vespertina and *L. diurna.*— *L. Flos-cuculi.* Common in swamps to 400 yds.—*Cerastium triviale.* Common in grassy places up to 500 yds. over High-cup Nick.—*Stellaria media.* Common up to 500 yds. — *S. Holostea, graminea,* and *uliginosa.* — *Arenaria serpyllifolia.* Common on wall-tops. — *Alsine verna.* Limestone and basaltic cliffs of High-cup Nick, plateau beyond, and Hilton Ghyll, 400–500 yds. — *Spergularia rubra.* Moraine heaps low down in High-cup Ghyll.

Montia fontana. Common in swamps up to the plateau end of High-cup Nick, 500 yds.

Hypericum perforatum, tetrapterum, and *pulchrum.*

Malva sylvestris. Seen only in a garden at Keisley.

Tilia intermedia. In planted woods only.

Linum catharticum. Grassy places up to 500 yds.

Geranium sylvaticum. Lower part of High-cup Ghyll, below Harbour Flats.—*G. pratense.* Frequent in the lanes and meadows, very ornamental.—*G. molle* and *dissectum.*—*G. lucidum.* Limestone cliffs on the spur of the hill between High-cup and Middle Tongue Ghylls, 450–500 yds.; and cliffs near Maizebeck.—*G. Robertianum.* Common in woods and amongst rocks up to 500 yds. — *Oxalis Acetosella.* Frequent in crevices of rocks up to 500 yds.

Ilex Aquifolium.

Acer Pseudo-platanus. Frequently planted about the farmhouses.

Ulex europæus. Hill-sides up to 400 yds. — *Genista tinctoria.* Grassy places between Keisley and Dufton. — *Ononis arvensis.* Limestone quarries at Keisley. — *Medicago lupulina.* — *Trifolium pratense* and *repens.* Frequent in grassy places up to 500 yds.— *T. medium.* — *T. procumbens.* Limestone quarry at Keisley. — *T. minus.*—*Lotus corniculatus.* Common in grassy places up to 500 yds. —*L. major.* Frequent in swamps up to 400 yds.—*Vicia Cracca* and *sepium.*—*Lathyrus pratensis.*—*Orobus tuberosus.*

Prunus spinosa.—*P. Avium.*—*P. Padus.* Lower part of High-

cup Ghyll, below Harbour Flats. — *Spiræa Ulmaria.* Common: var. *denudata.* Between Keisley and Dufton. — *Sanguisorba officinalis.*—*Alchemilla arvensis.*—*A. vulgaris.* Common in grassy places up to 500 yds; also on cliffs. — *Potentilla Tormentilla.* Common on the moors up to 2000 ft. — *P. Anserina.* — *P. Comarum.* Swamps up to 400 yds. in High-cup Ghyll. — *P. alpestris.* Cliffs of Maizebeck opposite the head of High-cup Nick. Also collected here by W. Robertson in 1822; see specimen in Herb. Mus. Brit.— *Fragaria vesca.* Grassy places up to 500 yds. over High-cup Nick. —*Rubus Idæus.* Frequent, but not ascending over 1000 ft. — *R. suberectus.* Abundant and typical in the wooded ghyll between Dufton and Murton. The fruticose Rubi seen were *rhamnifolius, umbrosus, Koehleri, diversifolius, corylifolius,* none of which ascend above the Mid-agrarian zone. — *R. Chamæmorus.* High ridges of Prospect Hill, and between High-cup and Hilton Ghylls, 600–700 yds.; and on plateau beyond High-cup Nick. — *Geum urbanum* and *G. rivale;* var. *intermedium* seen by roadsides at Keisley. The Roses noted are *mollis, tomentosa* and *canina,* of the latter vars. *lutetiana, dumalis, urbica, Reuteri,* and *subcristata.* — *Cratægus Oxyacantha.* Common up to 500 yds., the var. *monogyna* only.—*Pyrus Aucuparia.* Common, ascending to the basaltic cliffs of High-cup Nick, 500 yds. —*P. Malus.*

Epilobium parviflorum. — *E. montanum.* — *E. obscurum.* — *E. obscurum* × *parviflorum,* "on the *parviflorum* side," E. S. M. *in litt.* Wood near Keisley.—*E. palustre,* typical, and "a state approaching Haussknecht's *forma lapponica.* Seems to be the *E. lineare* Auct. pro parte," E. S. M. *in litt.* Swamps in High-cup Ghyll, alt. 1200 ft. — *E. alsinefolium.* Swamps in High-cup Ghyll (see also *Phytologist,* i. p. 1068) and on the plateau beyond, and in Hilton Ghyll, 400–500 yds. This and *Cochlearia alpina* are characteristic plants of the ghyll. — *E. alsinefolium* × *palustre.* High-cup Ghyll, alt. 1100 ft.—*Circæa lutetiana.*

Callitriche stagnalis. Swamps up to 500 yds. — *C. hamulata.* Pond about 1000 ft., High-cup Ghyll.

Sedum Rhodiola. Basaltic cliffs at the head of High-cup Nick, on both sides, 450–500 yds., and limestone cliffs of Maizebeck.— *S. villosum.* Frequent in swamps both in High-cup Nick and on the plateau above it, and in Hilton Ghyll, 400–500 yds. — *S. acre.* Limestone cliffs up to 500 yds. on the spur of hill between High-cup and Middle Tongue Ghylls, and towards Dufton Pike.—*Sempervivum tectorum.* On walls only.

Saxifraga stellaris. Swamps on the plateau above High-cup Nick and in Hilton Ghyll, 400–500 yds. — *S. nivalis.* There is a specimen of this plant in the British Museum Herbarium gathered by J. Tatham at "High-cup Scar." This we did not succeed in finding. Mr. Watson, in his *Cybele* (vol. i. p. 408), gives the height to which *S. nivalis* descends in the Highlands as 650 yards; and Sir J. Hooker, in the *Student's Flora,* gives the lowest height as 2000 ft.; so that the occurrence of the plant on High-cup Scar is important, as it is by far the lowest elevation to which it descends in the British Isles. The top of the cliffs of High-cup Scar, as has

already been said, we estimated at 1500 ft.—*S. tridactylites.* Limestone cliffs up to 500 yds.— *S. hypnoides.* Limestone and basaltic cliffs of High-cup Nick, 500–500 yards, and on the plateau beyond. The Backhouses gathered *Saxifraga Hirculus* between Greenburn Lead Mine and Dun Fell Hush (*Phytologist*, i. p. 894). — *Chrysosplenium oppositifolium.* Common in swamps, ascending to the plateau above High-cup Nick, 500 yds. — *Parnassia palustris.* Swamps in High-cup Ghyll up to 400 yds. — *Ribes Grossularia.* Frequent scattered bushes in hedgerows.

Hydrocotyle vulgaris. — *Sanicula europæa.* — *Helosciadium inundatum.* Pond on the moor above Keisley, 1000 ft. — *Bunium flexuosum.* Grassy places up to 400 yds. — *Pimpinella Saxifraga.* Basaltic cliffs of High-cup Nick; also limestone cliffs up to 550 yds. on Prospect Hill.—*Æthusa Cynapium.*—*Silaus pratensis.*—*Angelica sylvestris.* — *Heracleum Sphondylium.* — *Torilis Anthriscus.* — *Chærophyllum sylvestre.* A curious form of this plant, "with deeply incised shining dark leaves and a nearly smooth stem," is also recorded from High-cup Scar (*Phytologist*, i. p. 1068).—*C. temulum.*—*Conium maculatum.*

Hedera Helix. Ascends to the limestone cliffs above Keisley.

Sambucus nigra. Not certainly native. — *Viburnum Opulus.* — *Lonicera Periclymenum.* Frequent. Gathered by Mr. Leach at 500 yards on the crags of Hilton Ghyll.

Galium boreale. Cliffs of Maizebeck opposite the head of High-cup Nick.— *G. Cruciata, verum, Mollugo, uliginosum, Aparine.* — *G. saxatile.* Frequent on the moors, ascending to 2000 ft.—*G. sylvestre.* Keisley Quarry, and limestone and basaltic cliffs of High-cup Nick up to 500 yds. — *G. palustre.* Common in swamps up to 500 yds. —*Asperula odorata.*—*Sherardia arvensis.*

Valeriana dioica. Swamps up to 500 yds.—*V. officinalis.*

Scabiosa Succisa. Pastures up to 400 yds. — *S. Columbaria.* Limestone and basaltic cliffs up to the head of High-cup Nick, 500 yds.

Carduus nutans. Hilton Ghyll, near the lead mines.—*C. lanceolatus, arvensis,* and *palustris.* Common on the moors up to 500 yds. —*C. heterophyllus.* Wooded ghyll south of Dufton, with *Rubus suberectus.* — *Carlina vulgaris.* Limestone cliffs over High-cup Ghyll, 500 yds.—*Arctium minus.* Typical about the Keisley lime quarries. —*Centaurea nigra.*—*Chrysanthemum Leucanthemum.*—*Achillea Millefolium.* Pastures up to 500 yds.—*A. Ptarmica.*—*Senecio vulgaris.*— *S. sylvaticus.* Walls of Red Sandstone at Hilton. — *S. Jacobæa.*— *S. aquaticus.* Common in swamps up to 400 yds. in High-cup Ghyll.— *Bellis perennis.* Ascends to 500 yds.—*Solidago Virgaurea.* Common on basaltic cliffs at the head of High-cup Nick, 500 yds. —*Tussilago Farfara.* Ascends to the Hilton Lead-mines, 400 yds. —*Lapsana communis.*—*Hypochæris radicata.*—*Leontodon hispidus.*— *L. autumnale.* Common in meadows up to 500 yds. — *Tragopogon pratensis.*—*Taraxacum officinale:* var. *palustre* ascends to the plateau west of High-cup Nick, 500 yds. — *Lactuca muralis.* Limestone cliffs over High-cup Ghyll, 500 yds.—*Sonchus asper.*—*Crepis virens.* — *C. paludosa.* Swamps up to 450 yds. — *Hieracium Pilosella.* —

H. anglicum. Common on the limestone and basaltic cliffs of High-cup Nick, Maizebeck, and Middle Tongue Ghyll, &c., up to 550 yds. (*H. Lawsoni* is recorded from High-cup Scar in *Phytologist*, i. p. 1068). A plant gathered in High-cup Nick, alt. 1400–1500 ft., may be *H. clovense* Linton; the material, however, is too scanty for a definite determination. — *H. britannicum* F. J. Hanb. Basaltic cliffs of High-cup Nick, alt. 1400–1500 ft.— *H. murorum*. Cliffs of High-cup Nick (see *Phytologist*, i. p. 1068); also cliffs of Maizebeck Ghyll opposite the head of High-cup Nick. Found also by Mr. Leach on the high crags of Hilton Ghyll.— *H. murorum* var. *microcladium* Dahlst. Limestone cliffs of Maizebeck, about 1500 ft. — *H. vulgatum*. The common species of the cliffs, ascending to 500 yds. — *H. gothicum*. Limestone cliffs of Middle Tongue, alt. 1400 ft.—*H. sparsifolium* Lindeb. Gathered by Mr. Leach on the banks of the High-cup Nick stream.—*H. boreale*. Seen only on the Red Sandstone.

Jasione montana. Sandstone quarries at Dufton, and moraine heaps low down in High-cup Ghyll. — *Campanula latifolia*. — *C. rotundifolia*. Ascends to 500 yds.

Vaccinium Vitis-idæa. Basaltic cliffs of High-cup Nick, and high ridges and plateau above and beyond it, 500–650 yds. — *V. Myrtillus*. Common on the moors and on the cliffs, ascending to 2000 ft. — *Erica cinerea*. — *Calluna vulgaris*. Everywhere up to 2000 ft.

Fraxinus excelsior. Ascends to 450 yds. in High-cup Nick.

Gentiana campestris. High-cup Ghyll, 400 yds. — *G. Amarella*. Low down in High-cup Ghyll. — *Menyanthes trifoliata*. Swamps up to 400 yds.

Calystegia sepium.

Solanum Dulcamara.

Verbascum Thapsus. Sandstone near Dufton. — *Scrophularia nodosa*. — *Digitalis purpurea*. Common up to 500 yds. — *Veronica agrestis*. — *V. arvensis*. Ascends to 500 yds. on the limestone cliffs. —*V. serpyllifolia*. Grassy places up to 350 yds. — *V. officinalis*. Moors up to 500 yds. — *V. Chamædrys*. — *V. scutellata*. — *V. Beccabunga*. Common in swamps up to 500 yds. — *Euphrasia officinalis*. Pastures up to 500 yds. — *Bartsia Odontites*. — *Pedicularis palustris* and *sylvatica*. Common in swamps up to 500 yds. — *Rhinanthus Crista-galli*. — *Melampyrum pratense*. — *M. pratense* β. *montanum* is also recorded from High-cup Scar (*Phytologist*, i. p. 1068).

Mentha viridis. Keisley, a garden escape.—*M. hirsuta*. Swamps up to 400 yds. — *Thymus Serpyllum*. Pastures and rocks, common up to 500 yds. — *Nepeta Glechoma*. Near houses only. — *Prunella vulgaris*. Common in pastures up to 500 yds.—*Scutellaria galericulata*. Swamps of High-cup Ghyll, 400 yds. — *Stachys Betonica* and *sylvatica*.—*Lamium purpureum*.—*Ajuga reptans*.—*Teucrium Scorodonia*.

Myosotis cæspitosa.—*M. repens*. Swamps, ascending to 500 yds. on the plateau at the head of High-cup Nick. — *M. sylvatica* and *arvensis*.

Pinguicula vulgaris. Common in the hill swamps, ascending to 500 yds.

Primula vulgaris.—*P. farinosa.* Swamps of High-cup Ghyll up to 400 yds.—*Lysimachia nemorum.* Ascends to the plateau beyond the head of High-cup Nick, 500 yds.

Plantago major and *lanceolata.* Common up to 500 yds.—*P. media.* Limestone quarries at Keisley.

Chenopodium album.—*C. Bonus-Henricus.* Dufton and Merton, near houses only.—*Atriplex angustifolia.*

Rumex nemorosus, obtusifolius, and *crispus.*—*R. Acetosa* and *Acetosella.* On the moors up to 500 yds.—*Polygonum aviculare, Hydropiper,* and *Persicaria.*—*P. viviparum.* Meadows low down in High-cup Ghyll.

Empetrum nigrum. Common on the higher ridges up to 700 yds.

Mercurialis perennis.—*Urtica dioica.* Ascends to 2000 ft.—*U. urens.*

Ulmus suberosa. Planted only.—*U. montana.*

Quercus Robur.—*Fagus sylvatica.* Planted only.

Corylus Avellana.—*Alnus glutinosa.*—*Betula alba.*—*Populus alba.* Planted only.—*P. tremula.* Low down in High-cup Ghyll.—*Salix pentandra* and *nigricans.* By the stream low down in High-cup Ghyll.—*S. alba* and *purpurea.* Ghyll south of Dufton.—*S. cinerea, aurita,* and *Caprea.* Frequent.

Pinus sylvestris. Planted only.

Lemna minor.

Potamogeton polygonifolius. Pond on the hill-side over Keisley.

Triglochin palustre. Swamps up to 500 yds.

Orchis latifolia. Lower part of High-cup Ghyll, 400 yds.—*O. maculata.*—*Gymnadenia conopsea.* High-cup Ghyll, 400 yds.—*Habenaria viridis* and *bifolia.* High-cup Ghyll, 400 yds.

Iris Pseudacorus.

Scilla nutans.—*Narthecium ossifragum.*

Luzula sylvatica. Ghyll south of Dufton.—*L. campestris.*—*L. multiflora.* Peaty moors up to 2000 ft.—*Juncus triglumis.* Hill-slope beyond the head of High-cup Nick, 550–600 yds.—*J. effusus.* Swamps up to 550 yds.—*J. glaucus.* Swamps up to 400 yds.—*J. acutiflorus, conglomeratus, bufonius,* and *lamprocarpus.*—*J. supinus.* Swamps up to 500 yds.—*J. squarrosus.* Peaty moors, common up to 650–700 yds.

Scirpus pauciflorus and *setaceus.*—*S. cæspitosus.* Moors up to the highest ridges, 650–700 yds.—*Eriophorum vaginatum.* Moors up to the highest ridges, 2000 ft.—*E. latifolium* Hoppe. Bogs low down in High-cup Ghyll, alt. 1200 ft. A slender form with narrow leaves; a very similar plant was collected by the Rev. J. E. Leefe on Widdy Bank Fell, Teesdale. Hoppe's type is a plant in his Herb. viv. Cent. iii. No. 8, collected near Ratisbon; it has broad leaves, and 6–8 or more heads (see *Botanisches Taschenbuch,* 1800, p. 108).—*E. angustifolium.* Swamps up to the plateau beyond High-cup Nick, 500 yds.—*Carex dioica, disticha, curta,* and *ovalis.*—*C. pulicaris.* Swamps up to 500 yds.—*C. stellulata.* Swamps up to 500 yds.—*C. acuta.* Ghyll between Dufton and Murton.—*C. vulgaris.* Ascends to Gaskill Tarn, 2000 ft.—*C. glauca.* Ascends to 500 yds.—*C. pilulifera.*—*C. præcox.*—*C. panicea.*—*C. flava,* also var. *lepidocarpa* Syme.

L. H. Bailey, in *Mem. Torrey Club*, i. p. 29, makes this variety synonymous with var. *minor* Towns., and gives both as synonyms of *C. flava* var. *Œderi* Liljeblad, *Svensk. Fl.* 1st ed. (1792), p. 40. *C. Œderi* Syme (*C. chrysites* Link) he quotes as *C. flava* var. *cyperoides* Marsson. It ought to be noted, however, that Liljeblad *l. c.* makes *Œderi* a distinct species, and not a variety of *flava*. — *C. ampullacea*. Bogs near Maizebeck, about 1500 ft.

Anthoxanthum odoratum. Pastures up to 400 yds. — *Digraphis arundinacea*, *Alopecurus geniculatus*, *A. pratensis*, *Phleum pratense*, and *Sesleria cærulea*. Basaltic cliffs at the head of High-cup Nick, and limestone cliffs of the hill between High-cup and Middle Tongue Ghylls, 400–500 yds. — *Agrostis vulgaris*. Ascends to 500 yds.— *Aira cæspitosa*. Ascends to 500 yds. — *A. flexuosa*. Ascends to the highest ridges, 650–700 yds. — *A. præcox*. — *Avena flavescens* and *elatior*. — *Holcus mollis*. Ghyll between Dufton and Murton. — *H. lanatus*. Common up to 500 yds.—*Triodia decumbens*. Ascends to 500 yds.—*Molinia cærulea*. 400 yds.—*Glyceria fluitans*. Ascends to 400 yds. in High-cup Ghyll. — *G. plicata*. Plentiful by the side of the road between Keisley and Dufton. — *Poa annua*, *pratensis*, and *trivialis*. Common, ascending to 500 yds.—*P. Parnellii* is also recorded from High-cup Scar (*Phytologist*, i. p. 1068).—*Briza media*. Pastures up to 500 yds. — *Cynosurus cristatus*. — *Dactylis glomerata*. — *Festuca ovina*. Common up to 2000 ft. — *F. pratensis*, type and var .*loliacea*. — *Bromus giganteus*. — *B. asper*.—*B. mollis*.—*Brachypodium sylvaticum*.— *Triticum caninum* and *repens*.— *Lolium perenne*. Pastures up to 400 yds.—*Nardus stricta*. Common up to the highest ridges, 650–700 ft.

Pteris aquilina. Ascends to 500 yds. — *Cryptogramme crispa*. High-cup Nick, amongst fallen basaltic rocks, 400–550 yds.— *Lomaria Spicant*. Ascends to 450 yds. — *Asplenium Ruta-muraria*, *Trichomanes*, and *viride*. Frequent on the limestone cliffs up to 500 yds.; also on the basalt.—*Athyrium Filix-fœmina*. Ascends to 500 yds.—*Cystopteris fragilis*. Cliffs of limestone and basalt, up to 600 yds. — *Aspidium lobatum*. Hilton Ghyll, &c., up to 400 yds.— *Nephrodium Filix-mas*. Common up to 500 yds.; also vars. *affinis* and *abbreviata*. High-cup Ghyll. — *N. dilatatum*. Ascends to the highest ridges, 2000 ft. — *N. Oreopteris*. High-cup Nick, up to 400 yds. — *Polypodium vulgare*. Common on cliffs, &c., up to 500 yds. — *P. Dryopteris*. High-cup Nick; and gathered by Mr. Leach high up in Hilton Ghyll. We sought in vain for *P. Robertianum*; it is recorded from High-cup Scar (*Phytologist*, i. p. 1068).

Lycopodium clavatum. High moors, 500 yds.—*L. Selago*. Peaty moors up to 2000 ft. — *L. alpinum*. Hilly slopes beyond head of High-cup Nick, 500–600 yds.

Selaginella spinulosa. Plateau beyond High-cup Nick, 500 yds.

Equisetum arvense and *sylvaticum*.— *E. palustre*. Swamps up to 400 yds. in Hilton Ghyll. — *E. variegatum*. Plateau beyond High-cup Nick, 500 yds.

Chara vulgaris. Streams at the bottom of High-cup Nick, 400 yds.

Of the rare Teesdale species, we did not succeed in finding the following:—*Polygala uliginosa*, *Viola arenaria*, *Arenaria uliginosa*, *Potentilla fruticosa*, *Dryas octopetala*, *Saxifraga Hirculus*, *Ribes petræum*, *Hieracium iricum*, *corymbosum*, and *pallidum*, *Pyrola secunda*, *Vaccinium uliginosum*, *Gentiana verna*, *Myosotis alpestris*, *Bartsia alpina*, *Elyna caricina*, *Carex capillaris*, *Equisetum umbrosum*, *Woodsia ilvensis*.

On the other hand, *Sedum Rhodiola* and *Saxifraga nivalis* are not known in Teesdale. *Polemonium cæruleum* has also been recorded for Westmoreland by the Backhouses between Greenburn Lead Mine and Dun Fell Hush (*Phytologist*, i. p. 894), and is not known in the Durham or Yorkshire portion of Teesdale.

FIRST RECORDS OF BRITISH FLOWERING PLANTS.

COMPILED BY

WILLIAM A. CLARKE, F.L.S.

(Continued from p. 247.)

Asarum europæum L. Sp. Pl. 442 (1753). **1640.** "In Somersetshire, found by Dr. Lobel."—Park. Theatr. 267. "On Einsham Common in Oxfordshire."—How, Phyt. 12 (1650).

Daphne Mezereum L. Sp. Pl. 356 (1753). **1752.** "Woods near Andover in Hampshire."—Miller, Gard. Dict. ed. 6 (Thymelæa, no. 3).

D. Laureola L. Sp. Pl. 357 (1753). **1548.** "Daphnoides . . . in englishe Lauriel Lorel or Loury groweth plentuously in hedges in England."—Turn. Names, C vij.

Hippophae rhamnoides L. Sp. Pl. 1023 (1753). **1640.** "In our owne land by the sea coasts in many places."—Park. Theatr. 1005.

Viscum album L. Sp. Pl. 1023 (1753). **1538.** "Viscum tot secula anglis ignotū fuisse plurimam demiror, quū in pyris et malis sylvestribus nusq non proveniat."—Turn. Libellus. "Plentye of righte oke miscel" sent to "Hugh Morgan . . . oute of Essex."—Turn. ii. 165 (1562).

Thesium humifusum DC. Fl. Fr. v. 366 (1815). **1633.** "Mr. Goodyer found it growing wilde on the side of a chalkie hill in an inclosure on the right hand of the way, as you goe from Droxford to Poppie hill in Hampshire."—Ger. em. 555.

Euphorbia Peplis L. Sp. Pl. 455 (1753). **1666.** "Tithymali marini species minima ex Cornubia."—Merrett, 118 (1666). "Intu Pensans et Marketjeu copiose in Cornubia."—Ray, Cat. 237 (1670).

E. Helioscopia L. Sp. Pl. 459 (1753). **1562.** "Groweth most comonly in olde wastes, and fallen down walles, and about cities . . . called in diverse partes of England Wartwurt."—Turn. ii. 154, back.

E. platyphyllos L. Sp. Pl. 460 (1753). **1670.** "Nos in Comitatu Somersetensi non longe ab oppido Kinesham copiosum invenimus."—Ray, Cat. 299.

E. stricta L. Syst. ed. x. ii. 1049 (1758). **1842.** "Occurs between Tintern and the Wind-cliff. *Borrer.*"—Hook. Brit. Fl. ed. 5, p. 292.

E. hyberna L. Sp. Pl. 462 (1753). **1650.** "Tithymalus Hibernicus."—How, Phyt. 121. Cfr. Dillenius, Hort. Eltham., 388.

E. pilosa L. Sp. Pl. 460 (1753). **1834.** "In a lane from below Prior Park Lodge to Combe Down, and also in a wood to the east of the monument at Prior Park (Bath); kindly pointed out to me by the discoverers, Mr. E. Simms and Dr. Heneage Gibbs."—Bab. Fl. Bath, p. 44. Probably the same as the Spurge referred to by Lobel, "In sylva D. Ioannis Coltes prope Batthoniam." —Stirp. Hist. 194 (1576).

E. amygdaloides L. Sp. Pl. 463 (1753). **1562.** "Thys kinde have I sene in diverse places of England. Fyrst in Suffock in my lorde Wentfurthis parte [parke] besyde Nettelstede, afterward in Sion parke, above London."—Turn. ii. 154.

E. Paralias L. Sp. Pl. 458 (1753). **1562.** "I have sene the same in the West Countre besyde the sea syde."—Turn. ii. 154.

E. portlandica L. Sp. Pl. 458 (1753). **1724.** "Found by the Reverend Mr. Stonestreet in the narrow Neck of Land which joyns Portland to Devonshire [*sic*] 1711."—Dill. in Ray Syn. iii. 313. Perhaps referred to by Lobel (Adv. 163).

E. Peplus L. Sp. Pl. 456 (1753). **1597.** "Peplus sive rotunda Esula. Pettie Spurge."—Ger. 406, as to figure and description (for the most part), but the locality, "salt marshes neare the sea," suggests some confusion.

E. exigua L. Sp. Pl. 456 (1753). **1562.** "Groweth much in the stuble after the corne is caried."—Turn. ii. 155.

E. Lathyris L. Sp. Pl. 457 (1753). **1805.** "Certainly wild, and perhaps indigenous in several places in and near the parish of Ufton near Reading, springing up in dry stony thickets, periodically for a year or two after they have been cut, and till choked by briars, &c. Rev. Dr. Beeke."—Bot. Guide, i. 27.

Buxus sempervirens L. Sp. Pl. 983 (1753). **1597.** "Upon sundry waste and barren hils in Englande."—Ger. 1225. "On Box hill in Surrey."—Merrett, 18 (1666).

Mercurialis perennis L. Sp. Pl. 1035 (1753). **1597.** "About Greene-Hith, Swanes-combe village, Graves-ende, and South-fleete in Kent," &c.—Ger. 263.

M. annua L. Sp. Pl. 1035 (1753). **1562.** "Right Mercury beginneth now to be knowen in London and in gentle mennis places not far from London."—Turn. ii. 55 (1562).

Ulmus montana Stokes in With. Bot. Arr. ed. 2, i. 259 (1787). **1597.** "In a parke belonging to my Lord Treasurer, a mile beyond his Honors place at Waltham, called Thibalds. It groweth also in Kent neere South fleete."—Ger. 1297.

U. campestris Smith, Fl. Brit. i. 281 (1800). **1562.** "Groweth comonly in all countrees."—Turn. ii. 169, back.*

Humulus Lupulus L. Sp. Pl. 1028 (1753). **1548.** "Hoppes

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* Of course much earlier records may be found of our British trees, but I adhere to the plan of going no further back than Turner's works for quotations.

do growe by hedges and busshes both set and unset."—Turn. Names, E ij.

Urtica dioica L. Sp. Pl. 984 (1753). **1562.** "Our comon nettel of Englande."—Turn. ii. 170.

U. pilulifera L. Sp. Pl. 983 (1753). **1640.** "Hath beene found naturally growing time out of minde, both at the towne of Lidde by Romney, and in the streetes of the towne of Romney in Kent, where it is recorded Julius Cæsar landed with his souldiers, and there abode for a certaine time, which it is likely was by them called Romania & corruptly there-from Romeney or Romny, and for the growing of it in that place, it is reported that the souldiers brought some of the seede and sowed it there for their use, to rubbe and chafe their limbes, when through extreame cold they should be stiffe and benummed; being told before they came from home, that the climate of Brittaine was so extreame cold that it was not to be endured without some friction or rubbing, to warme their bloods, and to stirre up natural heat, from which time it is thought it hath continued there, rising yearely of its owne sowing."—Park. Theatr. 441.

U. urens L. Sp. Pl. 984 (1753). **1597.** "Neere unto hedges, bushes, and brambles, and olde wales."—Ger. 571.

Parietaria officinalis L. Sp. Pl. 1052 (1753). **1548.** "Groweth on walles."—Turn. Names, D iiij, back.

Myrica Gale L. Sp. Pl. ed. 2, 1453 (1762). **1548.** "A litle shrub called Gal in englishe, whiche groweth in fennes and waterish mores." Turn. Names, under "Myrtus." See also Herb. iii. 47.

Betula alba L. Sp. Pl. 982 (1753). **1551.** "In Northumberland."—Turn. i. 34 (84).

B. pubescens Ehrh. Beitr. vi. 98 (1791) (*B. glutinosa* Fries). **1842.** Edinburgh Catalogue, 2nd ed. Described and distinguished as a species in Bab. Man. ed. 1, p. 282 (1843).

B. nana L. Sp. Pl. 983 (1753). **1777.** "In Breadalbane" (Scotland), &c.—Lightf. Fl. Scot. 575, with a figure. Discovered by Sir James Nasmyth (E. B. 2326).

Alnus glutinosa Gaertn. Fruct. ii. 54 (1792). **1548.** "Groweth by water sydes and in marishe middowes."—Turn. Names, A vij.

Carpinus Betulus L. Sp. Pl. 998 (1753). **1597.** "Plentifully in Northamptonshire, also in Kent by Gravesend."—Ger. 1296.

Corylus Avellana L. Sp. Pl. 998 (1753). **1551.** "The hasell is so well knowen that wee nede not any description of it."—Turn. i. 68 (174).

Quercus Robur L. Sp. Pl. 996 (1753). **1562.** "It was told me by a learned man, a frende of myne, that in the year of our lorde mdlvii that there was a great plentye of galles found upon oke leves in the North countre of England and namely about Hallyfax."—Turn. ii. 109.

Castanea sativa Mill. Dict. ed. viii. n. 1 (1768). **1551.** "Chesnut trees growe plentuouslye in Kent abrode in the feldes & in many gardynes in Englande."—Turn. i. 47 (114).

Fagus sylvatica L. Sp. Pl. 998 (1753). **1548.** "Bech trees growe plentuously in many places of England."—Turn. Names, D i, back.

(To be continued.)

SHORT NOTES.

Vaccinium Vitis-idæa at low levels.—With reference to previous correspondence on the subject (*Journ. Bot.* 1892, pp. 88, 121), it may interest Mr. More and Mr. Stewart to know that the lower limit of this plant in Northern Ireland may be reduced to 200 feet. It grows abundantly on a peaty bank by the side of the road from Kilrea to Garvagh, Co. Londonderry, at a distance of about a mile from the former place. The exact elevation I had no opportunity of determining, but it is within ten or fifteen feet of 200 feet above ordnance datum. The road at this place runs through a bog, now mostly worked out for fuel, and this bog no doubt was the original home of the plant.—R. Lloyd Praeger.

Cystopteris montana Bernh. in Stirlingshire.—When on Ben Lomond on 9th August of this year (1894), in company with Mr. R. Kidston, F.G.S., and other friends, I had the pleasure to meet with this interesting little fern, recognising its deltoid fronds from having seen them in 1888 on hills north of Glen Lochay, Mid-Perth. Mr. Arthur Bennett, to whom the plant has been submitted, remarks:—"I think the *Cystopteris* must be *C. montana*, though certainly the setæ are much less numerous than usual." Fronds only were brought away, and it is to be hoped that this local species may spread at its newly-found station—wet grassy ledges on the precipitous cliffs of the northern face of the hill, at about 3000 ft., and in company with its congener, *C. fragilis* Bernh. It is somewhat remarkable that though Ben Lomond is but twenty-seven miles distant in a direct line from Glasgow, and is visited annually by many botanists, it should only at this late day be telling us that *Cystopteris montana* belongs to its flora, and to the flora of Stirlingshire. Through the kindness of Mr. Bennett, I am able to give particulars of the other five counties in Britain in which *C. montana* occurs, *viz.*:—(69) Westmoreland; (88) Perth, mid; (90) Forfar; (92) Aberdeen, south; (98) Argyle, main. "It was first found in Britain by Mr. W. Wilson, on Ben Lawers, in 1836" (*Syme*); and it is met with in "Arctic and alpine regions in Europe, Asia, and America" (*Sir J. D. Hooker*).—A. Somerville.

Pyrola rotundifolia L., var. arenaria Koch.*—Mr. Billups, of Warrington, has kindly sent me a box of fresh specimens from Formby, South Lancashire. They number 97 specimens, and an analysis of them produces the following results:—

3	specimens have	2	bracts between the rootstock and the flowers.		
14	,,	3	,,	,,	,,
25	,,	4	,,	,,	,,
23	,,	5	,,	,,	,,
22	,,	6	,,	,,	,,
6	,,	7	,,	,,	,,
3	,,	8	,,	,,	,,
1	,,	11	,,	,,	,,

* See *Journ. Bot.* 1893, 333.

In height they vary from 2½ in. to 10 in. One 10 in. high has 3 bracts; one 5 in. high has 8 bracts; one 2½ in. high has 5 bracts. Two stems on the same root (10 in. high) have respectively 4 and 5 bracts. One specimen 3 in. high has only 1 flower, and 6 bracts. This one looks as though it were a later flower than most of the others, the bracts being greenish white, most of the others being from brownish orange to a deep brown, tinged at the base with black. I am inclined to think the colour of these bracts changes very rapidly after gathering. The above gives an average of about 6 bracts, but if the 1–11 is left out, an average of 5 is obtained. The calyx-segments seem pretty regularly to be broader (nearly ovate or ovate) than the type plant. The pedicels in the upper flowers, *when in bud*, are shorter than the bracts, which are bent back as the flower expands, and, especially when the fruit begins to swell, the bracts become subequal; or, if longer, are generally partly twisted to shorten them. In the taller specimens the pedicels of the lower flowers are longer than the calyx, but, taking the whole number of specimens, they are fairly described as "about as long as the calyx." The leaves are smaller, and certainly are not contracted into the petiole so abruptly as in the type; but, as I before remarked, this varies greatly when looking at the species in its world-distribution. I should have liked to grow them, but I fear there are none of the specimens with sufficient roots to have a chance of succeeding. There certainly is a different look about these specimens from those of the Grande Mare (Guernsey), when fresh, although each small character, when taken separately, seems to shade off in specimens taken at random.—Arthur Bennett.

West Gloucester and Monmouth Plants (p. 263). — Since sending my paper, I have been able to add the following species to the list:—*Rubus Borreri*. 35. Rough ground below Chepstow Park Wood. — *Bupleurum tenuissimum*. 35. Mud banks, Magor Pill.—*Peucedanum sativum*. 35. Caldicot Moor and Magor Pill. — *Gnaphalium sylvaticum*. 34. Wooded hill, Hudnalls, near Bigsweir.—*Cnicus eriophorus*. 34. Hewellsfield.—*Cichorium Intybus*. 35. Very sparingly near Moulton and Dinham. — *Samolus Valerandi*. 35. Banks of reens near St. Pierre.—*Potamogeton pectinatus*. 35. Reens between Roggiett and Magor.—*Ruppia rostellata*. 35. Reens between Undy and Magor. — *Carex Pseudo-cyperus*. 35. Small pond near Chepstow and ditches at St. Pierre.—*Lycopodium clavatum*. 34. Tidenham Chase. In the list published last month *Euphorbia Cyparissias* was by some error given as occurring in v.-c. 35; it should have been *E. Lathyris*. The vice-comital number for *Rubus plinthostylus* (Genev.) should have been 34, not 35.—W. A. Shoolbred.

Trifolium ochroleucum in Sussex. — Whilst botanising in Sussex, I was fortunate to find *Trifolium ochroleucum* on the wayside by the road between Lower Beeding and Horsham. This plant has not been recorded for Sussex.—C. S. Nicholson.

Juncus tenuis in Cornwall.—In July last I found several plants of *Juncus tenuis* growing on a strip of waste land by the high road near here. It was also found growing in the same spot two years ago by Mrs. W. J. Graham, of Fowey, Cornwall.—Jas. N. Graham.

NOTICES OF BOOKS.

Letters of Asa Gray. Edited by JANE LORING GRAY. London: Macmillan. 2 vols. 8vo, pp. 838.

MRS. GRAY has done well to allow her husband to speak for himself in these volumes of letters. When Asa Gray was taken from us at the beginning of 1888, many sketches of his life were published by those who had the happiness of knowing him—all combining to form a pleasing picture of the best known and most respected representative of American botanists. He was happily characterised by his compatriot James Russell Lowell in lines which we quoted at the time of his death,* as one

> "Whose indefatigable hours
> Have been as gaily innocent,
> And fragrant as his flowers":

and the letters here published are such as might have been expected to issue from his pen. They show Asa Gray as the painstaking persevering conscientious worker, devoted to his chosen subject, yet not so absorbed in it as to be unable to find room for other interests and varied sympathies. Our chief interest is naturally in the letters which throw light on his intercourse with fellow-botanists; yet we are glad to have those which he addressed to Dean Church, which show another side of his character, and one which all who knew him, however slightly, must have felt to be present in it. "His religious views," wrote the Dean on the death of his friend, "were a most characteristic part of the man, and the seriousness and earnest conviction with which he let them be known had, I am convinced, a most wholesome effect on the development of the great scientific theory in which he was so much interested. It took off a great deal of the theological edge, which was its danger, both to those who upheld and those who opposed it. I am sure things would have gone more crossly and unreasonably, if his combination of fearless religion and clearness of mind, and wise love of truth, had not told on the controversy." It is a little strange that, notwithstanding his intimacy with Church, Gray seems never to have understood the Anglican, still less the Catholic, position; he speaks of the Warden of Keble (Dr. Talbot) as "a man of excellent sense, in spite of his setting in a very superstitious school," and naïvely records that "these very high clergymen have a way of preaching broad-minded sermons." Politically he was a warm admirer of Mr. Gladstone, with whom he "had pleasant talk, on nothing in particular," at a garden-party at Dollis Hill, on the occasion of his last visit to London. His letters to Darwin and others at the time of the war of secession are full of keen observation and sympathy, and the accounts of his travels, notably of his visit to Egypt in 1869, are very graphic. In spite of his devotion to work, he seems to have been an excellent correspondent.

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* *Journ. Bot.* 1888, 167.

But the interest of the book, as we have already said, centres in the botanical details, which indeed constitute its largest portion: and of these none are pleasanter reading than the accounts of Gray's visits to England. The first of these took place in the winter of 1839–40, when Gray was in his twenty-eighth year. He was the guest of W. J. Hooker in Glasgow until Christmas, after which he made his way to London. On this visit he contracted the friendship with the Hookers, Bentham, Brown, and other botanists, which endured until one or other was removed by death. The summary of this which he gives in his fragments of autobiography will be read with interest:—

"Dr. Boott was of course my best friend. But Hooker and Joseph came up to London for a week. Hooker insisted on taking me in hand as of his party, and so I was introduced to all his friends; took me to the Royal Society, &c.; dined one day with Bentham, to whose house I often went, and who gave me a full supply of letters to the botanists on the Continent. I worked a good deal at the British Museum; Robert Brown was very kind to me, and his assistant, J. J. Bennett, very useful, putting me up to all the old collections and how to consult them. At Linnean Society, thanks to Boott, had every facility for the Linnean herbarium. Old Lambert too; he had the Hookers and myself to dinner, and gave me as good opportunity as he could to consult the Pursh plants, &c., in his herbarium, which, not long after, was scattered, but it was in his dining-room, which was very much lumbered, and to be reached only at certain hours. Lindley had me down for a day to his house at Turnham Green, and a little dinner at the close. First visited Kew with the Hookers; called on Francis Bauer, who lived in a house near the river; found him at ninety making beautiful microscopic drawings to illustrate the genera of ferns, and Hooker then arranged for their publication in the well-known volume for which he furnished the text. Saw not rarely N. B. Ward, who lived at Well-close Square in Wapping, and whose cultivation of plants in closed cases attracted much attention. Went with Ward one day to dine with Menzies, then over ninety; he lived, with a housekeeper, at Maida Vale, or somewhere beyond Kensington."

Gray's Journal for this period is also printed; it contains fuller details of this memorable visit, and graphic little sketches of the botanists he met. He breakfasted with Robert Brown, "and stayed with him until 4 o'clock in the afternoon! I have a good deal to say about him, but not here. He is a curious man in other things besides botany. He has a few choice paintings, and a few exquisite engravings he has picked up on the Continent." Later he writes:—

"Brown has been very kind to me, in his peculiar way. He is very fond of gossip at his own fireside, and amused us extremely with his dry wit, but in company he is silent and reserved. I have found out also that it does not do to ask him directly any question about plants. He is, as old Menzies told us, the driest pump imaginable. But although he will not bear direct squeezing, yet by coaxing and very careful management any one he has confidence in may get a good deal out of him. I asked him some question about the manner in which the vessels of ferns uncoil. He at once remarked, 'They uncoil like a ribbon.'"

Gray began on this, his first visit, that examination of types in the Banksian Herbarium and elsewhere which he assiduously carried on during his subsequent visits to London. "Brown was there most of the time," he says on one occasion, "but did very little except to read the newspaper and crack his jokes." "Brown is extremely tender of other persons' feelings," he says later; and

although a certain reticence which Gray had already noticed in the great English botanist struck him on other occasions, he more than once acknowledges "much valuable information" from him. "Brown came to the Museum this morning," he says later, "with a copy of a curious late paper of Schleiden on the Development of the Embryo, with a parcel of his own notes on the same subject made in 1810, 1812, 1815, &c., which did not altogether correspond. Brown thinks much of Schleiden as an observer. He read me many of his old notes, and the subject took him to speak of his discoveries with regard to the embryo of *Pinus*." On another date he writes: "Went up to Brown's house to spend the morning. We talked profound botanical matters, and Brown not only amused and interested me, but gave me much valuable information. He talks of visiting America, and I have promised to plan him a route."

On his second visit to Europe, in 1850, Gray found Brown "looking older perhaps, but decidedly stronger—as healthy as possible and very lively." "He is a singular-looking man, with a very heavy lower lip and jaw, and generally carries his head down; but it is curious to watch him, and see how he kindles up, and what a satirical twinkle comes in the corner of his eyes when he tells some story, for he has a good deal of satire." During a short stay in England in 1855, Gray "made a long and interesting call on Brown, who is very old, but full of interest. I shall not again see this Nestor of botanists, as well as facile princeps, in this world"—a foreboding which was fulfilled. One more reference we find after Brown's death. "I send you back your Cavendish,"* Gray writes to Torrey. "The old cock was much like Robert Brown in many respects. Though there is nothing in him to love, he calls out a sort of admiration, partly in the literal sense, that is, wonder, mixed with pity, that he had no feelings. Brown had, and besides he was very social and not so very queer, but he lived very much in the same way, and I suppose had as little sense of religion." Gray's memoir of Brown is a masterly appreciation of his work, but the little touches above cited will help to make up that picture of our great botanist for which adequate material has not been published.

To English botanists, the biographical notes similar to the above, which are freely scattered throughout the volumes, will prove the most attractive features of the book, and we make no apology for quoting more of them. Next to the Hookers, Gray's greatest friend seems to have been Bentham. Those who knew the great systematist only in the later years of his life were mainly impressed by the reserve, which might almost have been termed dryness, that characterised him; and many were surprised at the lighter side presented by his earlier life, as detailed by Mr. Daydon Jackson in these pages.† From the first, however, Bentham was one of Gray's warmest friends; and these volumes abound in references showing him in this capacity. "Found Bentham an exceedingly pleasant and amiable man," Gray writes on his first

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* Probably Wilson's life of Henry Cavendish, the natural philosopher.

† *Journ. Bot.* 1884, 353.

visit: "a thoroughly kind and good fellow." Torrey seems to have been less favourably impressed: "I don't think Dr. Torrey saw enough of him, at least in his own house, to appreciate him fully," Gray says. The last mention of him is at a dinner party at Kew in 1880—"present four botanists, whose united ages sum up high, for Bentham had his eightieth birthday just before, DeCandolle is about seventy-five, I on the verge of seventy, and Hooker, the baby of the set, in his sixty-fourth year." And on receiving the news of his death, Gray writes, "We have nobody left to look up to!" Bentham's botanical career seems to have been largely due to his mother, of whom Gray, in 1839, writes at Montpellier, "Lady Bentham has a collection of plants made by herself for her son George at some interesting locality among the mountains, a set of which she is to have ready for me, knowing, she says, that George would surely offer them to me. Lady B., who is very aged, is evidently a very superior woman; she is a very good botanist also, therefore, as I do not know the plants of the South of Europe very well, I am a little afraid of her."

The tone of Gray's letters will disappoint those who value works of this kind in proportion to their *chroniques scandaleuses*. The amiability of the author has prevented any censorious criticism from finding its way into his letters: the most severe comment in them being that passed upon Robert Jameson—"a stiff, ungainly, forbidding-looking man, who gave us the most desperately dull, doleful lecture I ever heard. It was just like a copious table of contents to a book—just about as interesting as reading a table of contents for an hour would be; I may add just as instructive."

His greatest botanical trial seems to have been the genus *Aster*, the revision of which was one of his latest undertakings. "I am half dead with *Aster*," he writes in April, 1880. "I got on very fairly till I got into the thick of the genus, among what I called Dumosi and Salicifolia. Here I work and work, but make no headway at all. I can't tell what are species and how to define any of them, nor what the nomenclature is, *i. e.* what are original names. I will take this group abroad, but it will be just as bad there, unless I get some settled ideas before I start. I never was so boggled." And again in the same month, "If you hear of my breaking down utterly, and being sent to an asylum, you may lay it to *Aster*, which is a slow and fatal poison. Apparently it will take a year or more for me to finish it, with the greater chance that it finishes me before that time." In December of the same year he writes from Kew, "We are settled in our old lodgings, where we feel quite at home, and here I am to polish off the *Asteroideæ*—some very rough surfaces in *Aster* yet to grind down"; and in the following February, from the same place, "I am deeply mortified to tell you that, with some little exception, all my botanical work for autumn and winter has been given to *Aster* (after five or six months at home), and they are not done yet! Never was there so rascally a genus! I know at length what the types of the old species are: but how to settle the limits of species, I think I shall never know." The genus turned up again in the autumn of 1883, when he writes: "I am beginning

to print the *Compositæ* for my 'Flora of North America'; and am reissuing for the last time some of the more difficult and more unsatisfactory portions. My wife now excuses me to her friends for outbreaks of ill-humor, the excuse being that I am at present in the valley of the shadow of the Asters. This is 'sic itur ad astra,' with a vengeance." Earlier in life—in 1847—Gray had wrestled with Potamogetons: "I have been addling my brain and straining my eyes over a set of ignoble Pondweeds (alias *Potamogeton*) trying to find the

difference there should be
'Twixt tweedledum and tweedledee,

for all of which I suppose nobody will thank me, and I shall get no fee. Indeed, few would see the least sense in devoting so much time to a set of vile little weeds. But I could not slight them. The Creator seems to have bestowed as much pains on them, if we may use such a word, as upon more conspicuous things, so I do not see why I should not try to study them out."

Gray's last letter has already been printed in full in these pages,* with some remarks which appeared to be called for by its suppression—an apparently discreditable action which seems incapable of satisfactory explanation. It is little to the credit of certain American botanists that they should take every opportunity of depreciating the work of their great predecessor, and the tone of their comments upon him differs unpleasantly from that in which he referred to his fellow-workers.

We could linger much longer over this interesting book, but space forbids. A word, however, must be said in commendation of the admirable manner in which Mrs. Gray has edited the letters. Brief biographical footnotes are added throughout, and there is an excellent index—a feature too often omitted from works of this kind.

The Flora of the Assyrian Monuments and its Outcomes. By E. Bonavia, M.D. Archibald Constable & Co. Westminster. 1894.

This book, consisting of 236 large octavo pages, is well printed on good paper, but it would have certainly gained in value had the writer been less diffuse, and condensed what he had to say into half, or even into a quarter, the space. The first thirty-eight pages deal with the flora of the Assyrian Monuments proper—a very scanty one, consisting of only eleven species, including such obvious ones as the date-palm, pine, pomegranate, fig, reed, and lily. Dissertations on the sacred trees of Assyria and the so-called cone-fruit, follow, and a somewhat lengthy essay on the Lotus (pp. 93–158), containing nothing new. The author, of course, is right in identifying the lotus of the Egyptian paintings with a *Nymphæa*, though when he says that "the rose lotus (*Nelumbium speciosum* Willd.) never grew in the Nile valley" (p. 97), he is certainly wrong. Not only do we have the testimony of classical authors on this point, but the plant itself is figured on several paintings of the Ptolemaic period, and seeds

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* *Journ. Bot.* 1894, 19.

and leaves of it have been identified by me from amongst other vegetable remains from the cemetery of Hawara, in the Fayum province of Middle Egypt. The ancient Egyptian name of the date-palm is not *beg*, as stated on p. 8, but *bener*—*beg*, or more correctly *bagt*, being the name of the olive-tree.

PERCY E. NEWBERRY.

ARTICLES IN JOURNALS.

Annals of Botany (Sept.). — L. A. Boodle & W. C. Worsdell, 'Comparative Anatomy of *Casuarineæ*' (2 plates). — L. Kny, 'On correlation in growth of roots and shoots.' — E. Strasburger, 'Periodic reduction of number of Chromosomes in the life-history of living organisms.' — W. Pfeffer, 'Geotropic Sensitiveness of the root-tip.'—H. Wager, 'On the presence of Centrospheres of Fungi' (1 plate). — E. M. Holmes, 'New Marine Algæ' (*Myriophylla*, gen. nov.: 1 plate).—F. O. Bower, 'A theory of the Strobilus in Archegoniate Plants.'

Bot. Centralblatt. (Nos. 37, 38). — E. Jahn, 'Holz und Mark an den Grenzen der Jahrestriebe.'—R. Meissner, 'Zur Frage nach der Orientirungsbewegungen zygomorpher Blüten.'

Bot. Gazette (Aug. 15).—P. Dietel, 'New *Uredineæ & Ustilagineæ*' (1 plate).—J. W. Harshberger, 'James Logan, an early contributor to the doctrine of sex in plants.' — E. B. Uline & W. L. Bray, 'Synopsis of N. American *Amaranthus*.' — J. C. Bay, 'Crystals of ice on plants.' — G. E. Stone, 'Germinating seeds in Sawdust.'—J. E. Tilden, 'Development of *Protococcus*' (1 plate). — M. L. Fernald, *Lathyrus pauciflorus*, *Calochortus pavonaceus*, spp. nn.—M. Reed, 'Cross-fertilization of Petunias.'

Botaniska Notiser (häft. 4). — J. Erikson, 'Om icke geotropiska och negativt geotropiska rötter hos sandväxter.'—B. G. O. Floderus, '*Fragaria collina* × *vesca*.' — B. Jönsson, 'Undersökningar öfver respiration och assimilation hos mossorna.' — R. Jungner, '*Ranunculus acris* × *auricomus*.'

Bot. Zeitung (Sept. 1). — A. Y. Grevillius, 'Biologisch-physionomische Untersuchungen einiger schwedischer Hainthälchen.'—G. J. Peirce, 'Das Eindringen von Wurzeln in lebendige Gewebe.'

Bull. Soc. Bot. France (xl.: Session extraordinaire, 1893: August).—H. Coste, 'Florule du Larzac.' — Id. & F. Mouret, *Helichrysum biterrense*, sp. n. — F. Jadin, 'Algues des îles Mascareignes récoltées en 1890.'

Erythea (Sept. 1). — M. A. Howe, 'Early History of Hepaticology.' — J. B. Davy, 'Transcripts of Descriptions of Californian Genera and Species.'

Gardeners' Chronicle (Sept.). — *Hypocyrta pulchra* N. E. Br., sp. n. — *Tylophoropsis* (gen. nov.) *yemensis* N. E. Br. — (Sept. 8). W. F. Perkins, 'Dr. Thornton's Works.'—(Sept. 15). *Dendrobium Mettkeanum* Kränzlin, sp. n. — 'Root-tubercles of *Leguminosæ*.'—(Sept. 22). *Nerine appendiculata* Baker, sp. n.

Irish Naturalist (Sept.). — D. McArdle, Mosses of Castletown, Berehaven.

Journ. R. Microscopical Soc. (Aug.). — T. Comber, 'The Unreliability of certain characters generally accepted for Specific Diagnosis in the Diatomaceæ.'

Oesterr. Bot. Zeitschrift. (Sept.). — A. Nestler, 'G. A. Weiss' (d. 17 Mar. 1894). — Id., 'Untersuchungen der Fasciationem.' — J. Freyn, 'Plantæ novæ Orientales' (cont.). — R. v. Wettstein, '*Euphrasia*' (cont.). — F. Kränzlin, 'Orchidaceæ Papuanæ.' — H. Zukal, 'Zur Kenntniss der Cyanophyceen.'

BOOK-NOTES, NEWS, &c.

We have received from Heidelberg a handy little book by Prof. Pfitzer, entitled *Ubersicht des natiirlichen Systems der Pflanzen*. It is an outline of classification adapted for students when first taking up systematic botany. The chief characteristics of the great groups and their subdivisions down to the natural order are given in brief; and under the order its geographical distribution, and, in the case of the largest, the tribal divisions. Endemic genera and those of economic importance are also mentioned. One side of each page is left blank for notes. Very small or rare orders are omitted, and for the sake of simplicity no reference is made to exceptional genera. The whole occupies thirty-six pages octavo, and will form a useful guide to students of the latest German system of classification.

We are glad to learn that a new edition of the *Handbook of the New Zealand Flora* is in preparation, and that Mr. Thomas Kirk, F.L.S., has been entrusted with its execution. The work could not be placed in abler hands.

Mr. Sydney A. Skan has been appointed a second-class assistant in the Kew Herbarium.

The *Bulletin of Miscellaneous Information* for August is entirely occupied by "a summary of information relating to Bananas and Plantains," compiled, as we learn from the *Gardeners' Chronicle*, by Dr. Daniel Morris. The botanical portion is based on Mr. J. G. Baker's *Synopsis of Museæ*, three species being added. One name, although reckoned among the species and included in the clavis, should have disappeared—*M. nepalensis* Wall., which Dr. King, in a note appended to the name, does not believe to exist: "Wallich," he says, "must have described Roxburgh's *M. glauca* under the name *nepalensis*." Omitting this, the number of species enumerated is thirty-four.

Messrs. G. Philip & Son have published an interesting little *Handbook of Natural History for the use of Beginners*, edited by the Lady Isabel Margesson, with a preface by Sir M. E. Grant Duff. The botanical chapters are by Professor Geddes, who writes on "the Study of Flowers," by Mrs. Tindall and Miss Lorrain Smith, who take up Mosses and Fungi, and by Mr. E. M. Holmes,

who discourses on Seaweeds. There is much of practical suggestion in all these papers, but we may be allowed to regret that Prof. Geddes recommends "Grant Allen's bright papers" without any caution as to the want of accuracy which mars their usefulness, if not their "brightness."

Dr. Thomas Morong died at Boston, Mass., on April 26th. He was born at Cahawba, Alabama, on April 15, 1827, and successively adopted the legal and clerical professions. An early affection for botanical pursuits developed in later life into an enthusiasm which found its outlet in the study of the *Naiadaceæ*, in connection with which his name will be more particularly associated, and, in 1888–90, induced him to undertake an expedition to Paraguay, where he made a valuable collection of plants, sets of which have been distributed. He published numerous papers on Potamogetons, the most important being the memoir on *The Naiadaceæ of North America*, issued in 1893, and noticed at some length by his correspondent, Mr. Arthur Bennett, in this Journal for that year. Fuller biographies will be found in the *Botanical Gazette* and in the *Bulletin of the Torrey Club* for June last. Mr. Arthur Bennett sends us the following note:—"In May, 1880, Mr. Sandford, of U.S.A., told me Mr. Morong was desirous of exchanging notes on, and specimens of, *Potamogeton*. His first letter to me bears the date of June 14, 1880, and from that time until within a few months before his death our correspondence was kept up. The amount of knowledge of *Potamogeton* and allied genera shown in his letters is most remarkable, so much so, that they may be said to form a text-book of the genus. When we first corresponded, he lived at Ashland, Mass.; and his letters thence were not only filled with notes on the genus, but with local notes, on his home and surroundings: during his travels in South America his letters were most instructive." Dr. Morong is succeeded in the curatorship of the Columbia College Herbarium by Mr. T. H. Kearney.

The Monograph of the Mycetozoa founded on the collections in the Herbarium of the British Museum, on which Mr. Arthur Lister has for some time been engaged, is now all in type, and will be published in the course of a few weeks. It will consist of some 230 pages of letterpress, and 80 plates from the author's original drawings, besides woodcuts of the genera incorporated in the text. Mr. Lister has so long studied these minute organisms, and kept many of the species under constant observation, that he possesses exceptional opportunities for determining the value of the different forms. He has besides examined the principal authoritative collections in Britain and on the Continent, and has received authentic specimens from America, where this group has lately received much attention. Of the 275 species which he recognises, he has examined authentic specimens of 175, and has drawn up his descriptions of the species and varieties from the material he has examined. The monograph will consequently be of special value, and must form the basis of future work in these organisms. The production of the plates by the collotype process has greatly reduced the cost of the volume, so that it will be published at a comparatively small price.

The Hon. Alicia Tyssen Amherst publishes in *Archæologia* an interesting 15th century treatise on gardening (written by "Mayster Ion Gardener" about 1440–50), from a MS. in the Library of Trinity College, Cambridge. The text is accompanied by an interesting preface and glossary, the latter enriched by notes, written early in the 16th century in a copy of the *Aggregator Practicus de Simplicibus*. Miss Amherst is engaged upon a history of English Gardening, which is likely to prove an important addition to the literature of the subject.

Mr. G. F. Scott Elliot writes from Ruwenzori, Uganda, where he has been for nearly two months, about half of which time he has unfortunately been laid up with fever. His camp is about 7000 ft. up the mountain, which is covered from 7600 ft. to nearly 9000 ft. with a deciduous forest, above which are bamboos. Mr. Elliot, who has already sent home considerable collections, has obtained about fourteen hundred species, including a violet and a tree heath, collected at an altitude of nearly 11,000 ft.

The Lindley Library, established in 1867 as a result of the International Horticultural Exhibition and Botanical Congress held in London in the preceding year, is held in trust for the public benefit, and more particularly for the use of the Fellows of the Royal Horticultural Society, in whose rooms, at 117, Victoria Street, Westminster, S.W., it is now placed. It cannot be dissociated from the Society so long as the Society has quarters in, or in the immediate vicinity of, London. The income at the disposal of the Trustees is not more than sufficient to enable them to keep up the current periodicals, and to purchase annually a very restricted number of new books. It is proposed, therefore, to establish a "Library Fund," to be administered by the Trustees,—Mr. Carruthers, Dr. Hogg, Dr. Masters, and Mr. H. J. Veitch,—in conjunction with the Council of the Royal Horticultural Society. One of the most pressing requisites is a printed Catalogue of all the books and pictures, and of the rich collection of pamphlets, the utility of which is at present much impaired by the want of such a Catalogue. The preparation of this would be the first duty undertaken by the Trustees were funds placed at their disposal for the purpose. The Trustees would also be glad to receive donations of horticultural and botanical works for the Library.

"The Lord Chancellor has at his disposal the rectory of Honington, Suffolk, vacant by the death of the Rev. Dr. Marsden Hind, the great authority on the Suffolk Flora, and the discoverer on the banks of the Trent of the insidious American pond-weed." We clip this paragraph from the *Westminster Gazette* of Sept. 22. A notice of Dr. Hind will appear later.

The English Dialect Society is anxious to include the Supplement to the *Dictionary of English Plant Names* among its publications for 1894. Those who have any additional names or notes are invited to send them as soon as possible to Mr. Britten, at 18, West Square, Southwark, S.E.

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THE

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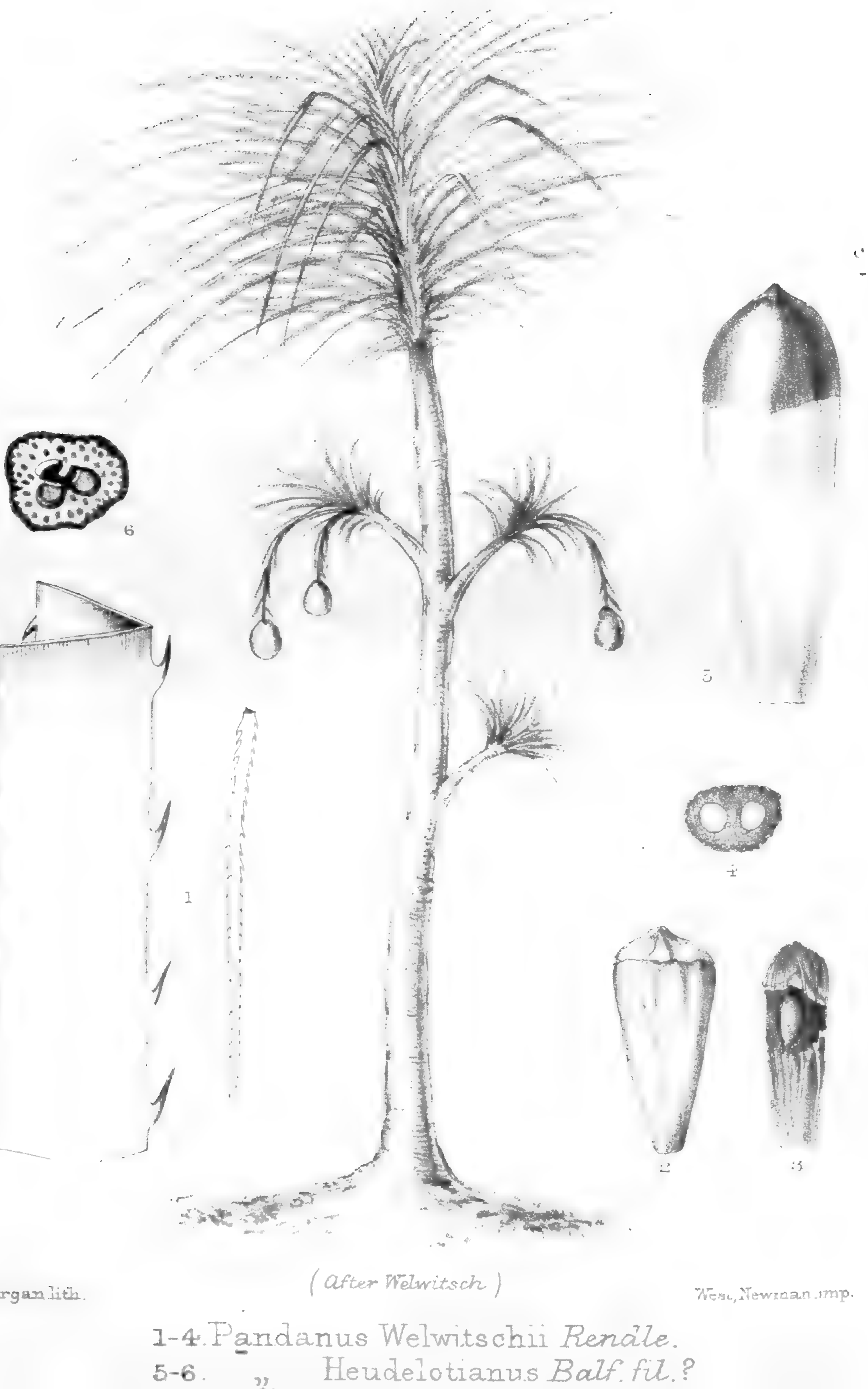

(After Welwitsch)

R Morgan lith. West, Newman imp.

1-4. Pandanus Welwitschii *Rendle.*
5-6. „ Heudelotianus *Balf. fil.?*

TROPICAL AFRICAN SCREW PINES.

By A. B. Rendle, M.A., F.L.S.

(Plate 347.)

In the notes appended I have tried to bring together the material preserved at the British Museum and at Kew, and to discover how many species of *Pandanus* from Tropical Africa are therein represented. In this attempt, Prof. Balfour's list in the Linnean Society's *Journal* (Botany, xvii. 33–68) has been of great service, and it is matter of much regret that the monograph of which it was to have been the forerunner is still a desideratum. Some species I have ventured to describe merely from the fruit, thinking it better, where these were obviously representatives of new species, to give them a name rather than to relegate them to indeterminatæ. For facilities in examining several of the fruits in the Kew Museum I am indebted to the courtesy of the Director of the Royal Gardens.

As the species seem to keep fairly to the coast line, in our present knowledge, I have kept the East and West tropical ones distinct. The uncertainty about *P. Candelabrum* Beauv. is a deterrent to the description of nearly allied West tropical forms; I have, however, come as nearly as is, I think, at present possible to the elucidation of Beauvois' species.

A.—*West Tropical African.*

1. Pandanus Candelabrum P. de Beauv. *Fl. Owar.* i. 37, t. 21, 22; Pers. *Synops.* ii. 597 (syn. excl.); Lam. *Encycl. Bot. Suppl.* i. 576 (Baquois candelabre); Spreng. *Syst. Veg.* iii. 898; Kth. *Enum. Plant.* iii. 96; Steud. *Nom. Bot.* (ed. 2), ii. 251 (syn. excl.); Miq. *Anal. Bot. Ind.* ii. 17; Wendl. *Ind. Palm. Cyclanth. Pand.* &c. (1854), 45; De Vries in Hooker's *Journal of Botany & Kew Gardens Miscellany*, vi. 265; Id. in *Tuinbouw Flora*, i. 172; Kurz in *Flora*, lii. 452, et in *Journ. Asiatic Soc. Bengal*, xxxviii. ii. 148; Solms-Laubach in *Linnæa*, xlii. 27; I. B. Balfour in *Journ. Linn. Soc.* xvii. 43; Gurich in *Mitth. Afrik. Gesell. in Deutsch.* v. 51. *P. Candelabrum?* Voigt. *Hort. Suburb. Calcutt.* (1845), 683; Wittmack in *Sitzungs. Gesell. Naturf. Freund. Berlin*, 1887, 144. *Tuckeya Candelabrum* Gaud. *Atl. Bonit.* t. xxvi. ff. 10–20; Walp. *Ann.* i. 755; Ad. Br. in *Ann. Sci. Nat.* ser. 6, i. 291. *? P. javanicus* Hort. et vars. a Balfour loc. cit. enumerat.—Arbor trunco erecto ramoso, ramis sursum erectis; radicibus numerosis, ex humo partim emersis; foliis glaucis margine costaque dorsali serrato-spinosis; spadicibus ♂ oblongo-cylindraceis, albis odoratissimis; bracteis spadices excedentibus supra basin ad apicem acutum angustatis, margine et costa dorsali serrato-spinosis, spinis antrorsis, staminibus ad duodecenis stipite sublongo subumbellatis; spadicibus ♀ subobovatis, quam spathæ bracteis masculinis similes multo brevioribus, drupis oblongo-cuneiformibus subangulatis, vertice convexis, 1- vel rarius 2–3-carpellaribus, stigmate plano irregulariter subcordiformi.

Hab. Banks of the river Formosa, near Agathon, West Tropical Africa, *P. de Beauvois*, 1786–7. ? Ambas Bay, W. Africa, *Mann*, Feb. 1861. No. 780 (Herb. Kew) et Cameroons Mts., *Mann* (Mus. No. 2, Kew).

The above diagnosis is compiled from Beauvois' original description and figure, with reference also to Solms-Laubach (*l. c.* p. 27), who states that for his description in *Linnæa* he had the use of part of Beauvois' own specimens, consisting of half the male spadix preserved in Herb. DeCandolle, with the label, "Don de M. de Lessert, 1821, Herb. Beauv.," and also the female specimen found without a ticket in Herb. Franqueville, but recognised from the fact that the small fragments of a head which formed part of the above-mentioned Delessert specimen fitted on to one of the heads in the Franqueville plant. Solms-Laubach states also that Gaudichaud used Beauvois' types for the descriptions in the *Atlas Bonité*. He refers to Mann's specimens at Kew as an extraordinarily closely related but distinct plant. The Royal Herbarium contains several sheets with portions of leaves, spathes, and a male inflorescence, of a tree said to be 20–25 ft. high. These I have carefully examined. The leaves are strong and rigid, $2\frac{1}{4}$ in. broad near the base, with the margins and back of the midrib armed with strongly curved, very sharply pointed teeth, of which I counted nine in six inches of the midrib; they are about as frequent on the margin above the base, where they are more numerous. On the margin they ascend, but are recurved on the midrib, as usual, at any rate in the African species. The male inflorescence is 16 in. long, with nine subcylindric spikes 6–8 in. long, densely clothed almost to the base with flowers; the latter have a stout stalk $\frac{1}{4}$ in. long, ending in a subumbellate group of about a dozen stamens, with a filament 1 line long, and a shortly apiculate anther of $\frac{1}{2}$ line. The bracts are equal to, or slightly shorter than, the spikes, broadly lanceolate, with a finely denticulate margin, the lowest $8\frac{1}{2}$ in. long by 2 in. broad. There are also present separate leaves, less rigid and thinner than the foliage leaf, with a broad sheathing base, and a linear acuminate upper portion, which I take to have been associated with the inflorescence; the teeth are, as just described in the case of the bracts, finer and closer than in the foliage leaf, those on the midrib pointing *upwards*, like those on the margin.

In Museum No. 2 is preserved a spike of young fruits labelled "Cameroons Mts., W. Africa," also collected by Mann. The bracts are finely toothed on the margin and midrib, *all the teeth pointing upwards*, as described in the male, and figured by Beauvois for his plant. They are 11–13 in. long, 2 in. or a little more in width above the base, and broadly linear, gradually tapering above to the apex; the folded midrib is very narrowly keeled; the ascending and sharply pointed teeth number seven to the inch in the middle of the leaf. The heads are ovoid, about $4\frac{1}{2}$ in. long by 3 in. in breadth; the riper fruits near the top show the elliptical or conico-elliptical long free upper part of those in Beauvois' figures. The irregularly cordate sessile stigma is mostly single, but sometimes two are present.

Solms-Laubach (*l. c.* p. 29) considers Mann's specimens to represent "a second species of the *P. Candelabrum* type," differing from Beauvois' in the following points:—The inflorescence in both sexes is distinguished by its considerable length; also by the fact that the spathes subtending the spadices do not show the foliage-leaf character of those of Beauvois' plant. The single drupes have a less strongly angled top; the stigmas are of a highly irregular distorted form, and surrounded by the pointed, toothed or lobed continuation of the style. The fruits are much larger, while the leaves do not agree with Beauvois' description, the thorns on the midrib being bent *backwards*.

As regards the male inflorescence, it is certainly larger than represented in Beauvois' plate, larger, in fact, in every way, but then there is nothing to indicate that Beauvois' is drawn natural size; it may be reduced, and Solms-Laubach admits that only part of the original spadix exists. Beauvois certainly depicts the bracts as longer than the individual spikes, but then the latter may not have done growing. Otherwise they are not so very unlike; the drawing is moreover somewhat rough. As regards the fruit, Solms-Laubach himself suggests that the figures may be from unripe specimens, an assumption which is not contradicted by what remains of the type, since this is so badly preserved as to allow of no certainty. The very conspicuous stigmas in the figure suggest an unripe head. As regards the leaves, my investigation of Mann's specimens show that the spathes agree fairly well with Beauvois' figures, the teeth on the midrib pointing upwards. Beauvois does not figure a leaf at any distance from the spike, nor does he say how the teeth are arranged, so there is no reason for supposing that the arrangement is otherwise than in Mann's plant. As the localities of the two plants are comparatively near each other, I am disposed to think that in Mann's specimens we have the true *P. Candelabrum* Beauv.

Note.—E. H. L. Krause, in his "Reisserinnerungen" (*Abhandl. Naturw. Verein. Bremen*, ix. 385), speaking of the Cameroons district, says (p. 389), "On the shores are Mangroves and Pandanus"; and further (p. 393), "In the branching of the root the Pandanus resembles the Mangrove. It grows in narrow Mangrove belts, among the latter, but not so far from solid land, and thrives better on more sandy soil, even above the tidal limit. (Another species of this genus grows on Sansibar, also on the high land, on sand)."

L. Wittmack (*Sitzungs. Gesell. Naturforsch. Freund. Berlin*, 1887, 144) describes a Pandanus inflorescence collected in Cameroons by F. A. Schran, and called Mupupu, the six heads of which form a close spike. The heads are larger than described by Beauvois for *P. Candelabrum*, the largest terminal one being 13 cm. long, and 11 cm. in diameter ($4\frac{3}{4}$ in. by 4 in.). "We have perhaps here a new species, as Solms-Laubach already, in his Monograph, suspects of occurring there. It speaks, however, in favour of *P. Candelabrum* that the yellow thorns of the midrib are diverted forwards, not backwards, as in Mann's plant mentioned by Solms-Laubach." In the list on the next page it is entered *Pandanus Candelabrum?*

Judging from the description of the fruit, this may very probably be the true *P. Candelabrum* Beauv.

G. Gürich (*Mittheil. Afrik. Gesell. in Deutsch.* iv. 248) refers to isolated specimens of *P. Candelabrum* in the Niger delta, but gives no information as to the nature of the plants.

2. **P. Barterianus**, sp. nov. capitulis latissime ovatis vel subrotundis, fructuum singulorum vertice 5–7-angulo, brevissime pyramidali, apice centrali producto obtuso.

Hab. Fernando Po, W. Africa, *Barter* (Mus. No. 2, Kew).

An inflorescence in the Kew Museum bears several heads, the largest of which measures 5 in. long by 4½ in. broad, the smallest, which is nearly spherical, 3½ in. each way. The fruits are characterised by the angular shortly pyramidal upper portion rising rapidly in the centre into a prominent blunt apiculus; the top, including the apiculus, is about ½ in. long. The pointed fruits distinguish it at once from the neighbouring *P. Candelabrum*.

3. **P. Welwitschii**, sp. n. (Pl. 347). Arbor erecta 10–20-pedalis ramis sub capite magno folioso paucis brevibus subascendentibus; foliis longis linearibus basi cito superne sensim angustatis, apice flagelliformi, marginibus et costa dorsali spinosis, spinis magnis acutis margine valde ascendentibus, costa recurvatis; capitulis ovato-ellipticis, matur. lutescentibus; fructibus singulis subpollicaribus, siccis cuneiformibus, vertice libero breviter pyramidali umbone obtuso terminato, loculis 1–2.

Pandanus (*Candelabrum* Flor. Nigr.?) Welw. *Apont.* p. 586, No. 36.

Hab. Frequens (ast interrupta extensione) ad ripas fluminis Cuanza prope Candumba, et Ilha Calemba. March, 1857. Vulgo Quicari vel Quitari, Welw. herb. 5770, coll. carp. 1015.

Trunk 1 ft. in diam. at base 10–15 ft. high, seldom higher than 20 ft. Habit, as depicted by Welwitsch, quite different from that of *P. Candelabrum*. The stem rises erect from the ground with no supporting roots at base, and bears a few (three in the picture) half-ascending short branches (two of which bear pendulous heads of fruit), and terminates in a large leafy head. Leaf 1¼ yds. long, 14 lines broad at middle, with large sharp-pointed strongly upcurving teeth on the margins, and similar recurved teeth on the back of the midrib. Head of fruits with a vertical diameter of 6 in., transverse 3 in. The fruits are 12–14 lines long, 5–7 lines broad in the dry state, and cuneiform in shape, having a larger rounded upper and a narrowing lower portion. The free part is shortly pyramidal, 1¼ line long, with a blunt central umbo. They are 1–2-locular, a deep red sclerenchyma surrounding the loculus, forming a thick endocarp which occupies the centre of the fruit, scarcely ascending into the spongy mesocarp in the upper part, and passing into fibres immediately below the seed cavity.

Described from specimens of leaves and fruit collected by Welwitsch, and from his notes, with a sketch of the habit. Welwitsch further says, "Vegetabile omnium quæ in Angola inveni, facile tenacissimum"; and in another note, "The rapidity with which even the thicker shoots will take root in inundated places is made use of in Cabinda and elsewhere by cutting off from the mainland

small bays of overflowed rivers by means of Pandanus-shoots, whereby the fish which are in these bays may be very easily caught when the flood subsides."

Differs from *P. Candelabrum* in habit, and the shape of the fruit, the short pyramidal free portion contrasting strongly with the larger rounded top of *P. Candelabrum*.

In Apontam. 545, it is consigned to the 3rd region, R. altoplana, as contrasted with the littoral and mountainous regions.

Note.—In an account of the Pogge-Wissmann Expedition in West Equatorial Africa, in Loanda and the country behind (*Mittheil. Afrik. Gesell. in Deutsch.* iv. 248), a *Pandanus* is mentioned as forming impenetrable thickets on the river banks; the leaves are used for mats and the like. Its native name is dikāka, plur. makāka, in Malange (Loando) mavalla.

4. P. THOMENSIS Henriq. in *Bolet. Soc. Broter.* v. (1887), 206. Island of St. Thomas, W. Africa.

5. P. HEUDELOTIANUS Balf. fil. in *Journ. Linn. Soc.* xvii. 49. *Heterostigma Heudelotianum* Gaud. *Atl. Bon.* t. 25, ff. 15–31, et *Explication et Descript. des Planches de l'Atlas*, D'Alleizette, p. 127; Walp. *Ann.* i. 755; Ad. Br. in *Ann. Sci. Nat.* ser. 6, i. 291.

Hab. Senegambia.

Fruit, seed and stigmas only are figured. The actual size of the fruit is doubtful, as D'Alleizette simply says, "Syncarpe grossi."

Some fruits in the British Museum collected by Mungo Park (Pl. 347, ff. 5, 6) resemble the above figures; referring to these, Balfour says in MS., "It may be *P. Heudelotianus*, or a large form of *P. Candelabrum*." Park's fruits are very similar in shape to Gaudichaud's species; the apex, when present, is, however, somewhat more pointed. The sclerenchymatous tissue projects into the apex, leaving also the longitudinal space as in the figure in the *Atlas*. In transverse section they show traces of 2–4 loculi, one or more of which contain no seed. They are 2 in. long by ½–¾ in. broad, and have a rounded upper portion tapering gradually to the base, giving an obovately cuneate outline. The exposed top is nearly ½ in. long.

There is in the Kew Museum a portion of an unripe head of fruits from Sierra Leone, collected by H. Bockstatt. The small short fruits are 4–6-angular, with the angles much sharper below the rounded very flat top. They are 5–6 lines long, and about as broad; also apparently unilocular.

A specimen of wood, in the same collection, labelled "*Pandanus*," procured in Dr. Baikie's Niger Expedition in 1857, bears on its surface numerous short stout spines.

B.—*East Tropical Species.*

6. **P. Rabaiensis** Rendle in *Journ. Linn. Soc.* ined. A species with the stamens spicately arranged in the stalked male flowers; and fruits somewhat resembling those of the Malagasy *P. utilis* Bory, but with a shorter, more rounded top.

Hab. Rabai Hills, Mombaz, *W. E. Taylor*, 1886. (Herb. Mus. Brit.).

7. **P. Kirkii,** sp. nov. fructibus in syncarpiis connatis his *P. odoratissimi* subsimilibus, majoribus autem cum vertice valde rotundate-angulato, 7–9-carpellaribus, apicibus obtuse umbonatis; mesocarpio externo subtenuiter fibroso tum fibro-lignoso in endocarpium durum rubro-brunneum transitum præbenti, vertice fibris validis in loculos ad numerum carpellorum septatis.

Hab. Mainland opposite Zanzibar, *Dr. Kirk*, 1867 (Mus. Kew), vulgo Rope.

The syncarps are obovately cuneiform in shape, the smooth polished upper part passing into the narrow fibrous lower portion, $2\frac{1}{3}$–$2\frac{1}{2}$ in. in length by $1\frac{1}{2}$–$1\frac{2}{3}$ in. greatest breadth. The large rounded upper part shows divisions into 7–9 slightly elevated subangular portions, terminating in a low blunt umbo. The number of loculi corresponds to that of the portions of the syncarp. From the large solid mahogany-coloured endocarp rise strong dense fibres in the large upper portion of the syncarp, separating it into chambers corresponding to the number of the carpels.

Note.—There is in the Kew Herbarium a male inflorescence, labelled "Zanzibar, Dr. Kirk," and received in September, 1868. There is nothing to co-relate it with the fruits just described. The ovate-acuminate bracts are very finely denticulate, while the male flowers closely resemble those of *P. Rabaiensis*, the stamens being spicate on a thick pedicel, while the connective is produced above the pollen-sacs into an arista (larger than in *Rabaiensis*), which may be half the length of the latter.

8. **P. Livingstonianus,** sp. nov. capitulis ovatis; fructibus singulis sæpius 5-angulis, vertice subplano umbone centrali subobtuso.

The Kew Museum contains a shoot bearing a head of fruits collected by Dr. Kirk, and labelled "Luabo, Mths. of Zambesi, Dec. 1859." The leaves near the spike bear finely upwardly-curving teeth on the margin only. The lower leaves have rather larger more distant teeth, which occur also on the midrib. The head is not quite ripe, ovate in shape, and 5 in. long by 3 in. broad. The fruits are generally 5-angled, with a flat top and a central rather blunt umbo; the top measures 6–7 lines across in the nearly ripe examples at the apex of the spike.

The fruit recalls that of *P. Barterianus*, but is easily distinguished by its flattened top, with the blunt umbo.

Note.—Livingstone (*The Zambesi and its Tributaries*, p. 19), in his description of the scenery on the Kurgone, one of the mouths of the Zambesi, says, "The Pandanus, or screw-palm, from which sugar-bags are made in the Mauritius, also appears, and on coming out of the Canal into the Zambesi many are so tall as in the distance to remind us of the steeples of our native land." In the accompanying plate the tree is apparently between 40 and 50 ft. in height. supported at the base by forking roots for a height of 8–9 ft. The tapering stem commences to branch immediately above the roots; the branches curve at first downwards, and then rise towards

the leaf-crowned apex; their length decreases gradually upwards, giving a tapering outline to the tree. Whether this is conspecific with the fruit just described must of course remain for the present doubtful. Dr. Kirk was, however, with Livingstone, and the date on his ticket coincides with the time referred to in the quotation just cited.

Note.—There is in Herb. Kew a single leaf collected by Schweinfurth at Dingbe, in the Niamniam Country (Reise nach Central Africa, No. 3263). It is 9 ft. long, with large strong sharply-pointed teeth resembling somewhat those of *P. Welwitschii*, but more spreading.

Nomina indeterminabilia.

P. leonensis Hort. Lodd.; Wendl. *Ind. Palm. Cyclanth. &c.* (1854), p. 46.—Guinea.

P. sessilis Bojer, *Hort. Maur.* 302.—Tropical Africa, Zanzibar, Pemba.

DESCRIPTION OF PLATE 347.—*Pandanus Welwitschii*, sp. n. After a drawing by Welwitsch, of which there is a copy in Herb. Mus. Brit. Fig. 1. Portion of leaf, showing margin and midrib (reversed), and apex (nat. size). 2. A fruit. 3. Ditto, in longitudinal section. 4. Ditto, in transverse section (all nat. size). 5. A fruit from Mungo Park's specimen (cf. *P. Heudelotianus*). 6. Ditto, in transverse section (both nat. size).

THE STIPULES OF BLEPHAROSTOMA TRICHOPHYLLUM.

BY J. BRETLAND FARMER, M.A.

IT will probably be known to those who are specially familiar with Liverworts, and with their literature, that the plant named above has been described in certain handbooks as exstipulate. As this statement is quite erroneous, it seems desirable, in the interest of those who may wish to identify the plant, that the mistake should be pointed out.

The genus *Blepharostoma* was founded by Dumortier,* and, as at first constituted, included three species. Of these, however, only the one which forms the subject of this note is, by other authors, retained in Dumortier's genus. In his diagnosis of this species, the author, in the works cited below, speaks of it as being examphigastriate (*stipulis nullis*), and he has been followed in this by Dr. Cooke in his recently published *Handbook of British Hepaticæ*.

It is not easy to understand how the mistake could have originated, as an examination of the plant at once shows that the arrangement of its leaves is tristichous. The leaves of each of the three rows are deeply cleft into a variable number of transversely septate filaments, the division reaching to the base of the leaves except in the region of the fructification. It is possible that the

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* See Dumrt. *Recueil d'observations sur les Jungermanniacées* (1835), p. 18, and *Hepaticæ Europæ* (1874), p. 95.

filaments belonging to the amphigastrium may have been ascribed to the dorso-lateral leaves in the case of shortened stems, where the foliar organs are densely crowded. But a glance at an attenuated example at once reveals the true state of the case. The three sets of leaves lie in three distinct transverse planes, forming a $\frac{1}{3}$ spiral. Moreover the amphigastrium is commonly smaller than either of the neighbouring dorso-lateral leaves and its filamentous segments (*crura* of Spruce) are also fewer in number than in them. The amphigastria are further easily distinguished by the root hairs which rise behind them in the median line, and sometimes actually spring from the cushion on which the filamentous leaf-segments are situated. It is thus seen that the error is easy to rectify, and it is the more odd that it should have arisen at all, since the plant has been correctly described in this particular by many other writers. Thus the *Synopsis Hepaticarum* has, "foliis amphigastriisque conformibus," which is sufficiently accurate for ordinary diagnostic purposes. The "stipules" are mentioned in the description of the plant in the *English Flora*, p. 121; and Spruce (*On Cephalozia*, p. 87) not only refers to them, but also calls attention to the dissimilarity existing between the number of the segments or *crura* in the dorso-lateral and ventral leaves respectively.

It would seem, however, from Hooker's description, given in his *British Jungermanniæ*, tab. 7, that "when the plant is closely attached to the ground, the under side is bare of leaves." It is possible that in this observation lies the clue to the origin of the mistake. But of course the absence of the amphigastria, under the special circumstances mentioned by Hooker, affords no criterion either as to their existence or absence in the normally growing plant. Personally, I have never failed to detect them in fresh specimens, and I believe that their suppression is only exceptional, and that, where it obtains, it may be ascribed to the prevalence of special conditions.

FRULLANIA MICROPHYLLA.

By W. H. Pearson.

Frullania microphylla. *Frullania Tamarisci* (L.) var. *microphylla* Gottsche ex Carrington in *Trans. Bot Soc. Edin.* vii. 457 (1863).

Exsicc. Gottsche & Rabenh. *Hep. Eur.* n. 209 & 636; Carr. & Pears. *Hep. Brit.* Fasc. ii. n. 137.

Dioicous, shallowly cæspitose, small, reddish brown to brownish black. Stems procumbent, dichotomously branched or pinnate, radiculose; rootlets fasciculate, dirty white, produced from base of stipules. Leaves incubous, closely imbricate, horizontal, unequally bilobed, antical lobe crossing the stem, convex, broadly oval, rotundate, postical lobe about three times smaller, saccate, oval, erect, with apex inclined towards the stem; epidermis slightly polished; cells small, 4-, 5- and 6-angled; walls thick; leaves crossed obliquely by a line of slightly larger and darker moniliform cells.

Stipules approximate, nearly twice as broad as the stem, oval, ovate or obovate, bifid to about the middle; sinus subacute; segments obtuse, subacute or acuminate; margin entire. Bracts about twice as large as the leaves, unequally bilobed; antical lobe oblique, acute; margin serrate-dentate; postical about two-thirds smaller, subrhomboid or broadly lanceolate, acute or acuminate, irregularly serrate-dentate, sometimes with a large segment on the inner margin near the base; bracteole oval, bifid to nearly the middle; sinus obtuse; segments lanceolate, acuminate; margin serrate-dentate. Perianth projecting about half beyond the bracts; antical side carinate; postical smooth, convex; epidermis smooth; cells similar to leaf-cells, only with the dark ones irregularly dispersed; apex slightly rostellate. Capsule subsphærical; valves with seven trumpet-mouthed elaters attached to each, unispiral. Male stems irregularly bipinnate; catkins small, on short lateral branches, globose; perigonial bracts 2–3 pairs, turgid at the base, unequally bilobed; antical lobe broadly oval; postical rather smaller, oval; antheridia with long bearers, subglobose.

Dimensions.—Stem ½–¾ in. long, with leaves ·6 mm. wide; diam. of stem, ·075 mm.; leaves, antical lobe, ·35 mm. × ·275 mm.; postical lobe, ·175 mm. × ·1 mm.; antical, ·35 mm. × ·25 mm.; postical, ·15 mm. × ·1 m.; antical, ·45 mm. × ·3 mm.; postical, ·2 mm. × ·15 mm.; cells ·02 mm., ·0175 mm., ·02 mm × ·0175 mm.; stipules, ·2 mm. × ·125 mm.; segments ·11, ·275 mm. × ·175 mm.; seg., ·15 mm.; bract, antical lobe, ·75 mm. × ·4 mm.; postical, ·5 mm. × ·25 mm.; bracteole, ·4 mm. × ·25 mm.; seg., ·225 mm., ·275 mm. × ·15 mm.; seg., 125 mm.; perianth, 1·0 mm. × ·5 mm., 1·25 mm. × ·55 mm.; valves of capsule, ·3 mm. × ·275 mm.; elaters, ·225 mm. × ·02 mm.; diameter of pedicel, ·3 mm.; male catkins, ·4 mm. × ·4 mm.; perigonial bract, antical lobe, ·4 mm. × ·275 mm.; postical, ·3 mm. × ·175 mm.; antheridia, ·125 mm. × ·1 mm.

Habitat. On smooth face of rocks and on trees in exposed or shaded places, mostly near the coast, in shallow patches, closely attached to the rocks or trees. Rare. 1. The Lizard, W. Cornwall; *W. Curnow*, July, 1883. St. Mary's, Scilly; *W. Curnow*, July, 1872. 7. Barmouth, Merioneth; *W. H. P.*, June, 1878. 10. Ingleton, Yorks; *Webster & Pearson*, May, 1893. South of Ireland, Old Weir Bridge, Killarney; *Carrington*, 1861. Glengariff; *Carrington*, 1861; *G. E. Hunt.*

For several years I have considered *Frullania Tamarisci* var. *microphylla* Gotts. to have well-marked specific characters, but whilst the late Drs. Carrington and Spruce did not think fit to raise it to specific rank, I refrained from publishing it as such. Dr. Spruce wrote me some time before he died that he considered it had good claims to specific rank, adding that he had Carrington's and Hunt's specimens from Glengariff, &c., and Curnow's from Cornwall, and found them essentially different from *F. Tamarisci.*

Herr Stephani, to whom I have submitted descriptions and specimens, writes:—"This is doubtless a good species. The differences between *F. fragilifolia* Tayl. and it are—

F. fragilifolia :—

stouter.
postical lobes cucullate.
stipules cuneate, segments truncate, ¼ only bilobed.
bracts ♀ obtuse, mamillately dentate.
innermost bracteole large, segments ovate, apex acute, on one side connate with leaf.

F. microphylla :—

smaller.
postical lobes longer, saccate.
stipules oblong, segments acuminate, ½ bilobed.
bracts ♀ acute, spinosely dentate.
innermost bracteole small, segments lanceolate, apex subulate, on both sides free.

There is little difference in the cells, but the dotted line of large brown cells is uninterrupted in *F. microphylla*, and consists of single scattered cells in *F. fragilifolia*."

This is certainly the species which it resembles most in size and habit, from which it also differs in the persistent leaves, which have a broader base at their insertion; the perianth is also smaller and oval. It differs from *F. Tamarisci* in its much smaller size, leaves more oval, with relatively larger postical lobes, stipules oblong, and not at all calcarate; from *F. dilatata* in its smaller size, more oval leaves with dotted moniliform cells, stipules with margin entire, antical lobe of bract serrate, and smooth perianth.

ON THE GENUS ACROLOPHIA.

By R. Schlechter and H. Bolus.

The genus *Acrolophia* was proposed by Prof. Pfitzer in his treatise on the *Orchideæ* in Engler and Prantl's *Natürlichen Pflanzenfamilien* in 1888, and was based upon certain species of *Eulophia* which he separated from that genus of R. Brown on account of their duplicative vernation and their terminal inflorescence. Respecting the systematic value of the former character there exists considerable diversity of opinion, and our experience scarcely warrants our coming to a conclusion upon it. With respect to the character derived from the inflorescence, Pfitzer appears to have been the first orchidologist who has insisted upon its importance in classification (*Entwurf eines natürlichen Systems der Orchideen*, 1887). Bentham (*Journ. Linn. Soc.* xviii, pp. 283–4) acknowledged the value of his views, and partially adopted them, especially in the arrangement of the subtribes of *Epidendreæ*. To the extent of admitting the weight of vegetative characters, in conjunction with others, our observation has also confirmed Pfitzer's opinions. But we cannot follow him, nor, we think, will most orchidologists, when he elevates these characters to a rank above those derived from the form, number and arrangement of the pollen-masses,—a course which results in his placing the Vandeous groups which he calls *Polystachinæ* and *Podochilinæ* between, and in close juxtaposition with, *Liparidinæ* and *Læliinæ*, which the great majority of systematists regard as belonging to the tribes *Malaxideæ* or *Epidendreæ*.

To the terminal inflorescence we may add the leafy stems and the coriaceous persistent leaves which in *Acrolophia* appear to offer natural marks of distinction from *Eulophia*. We hesitate the less, too, in accepting this genus because, if it be rejected, we should be almost compelled, for the sake of consistency, to join with *Eulophia* both *Ansellia* and *Cymbidium*, and, in fact, nearly all those genera which have been grouped by Bentham under the subtribes *Eulophieæ* and *Cymbidieæ*, of some of which the distinctions are very slight; and should thus be insensibly drawn towards the danger (against which Hooker has sounded a note of warning) of placing all orchids into a handful of genera of immense and unwieldy size. In such large and closely similar groups as those of which we are treating it becomes almost a necessity, and is certainly an advantage, to give more importance to vegetative characters than has hitherto been customary.

It may be urged against us that we have ourselves given up the extensive genus *Lissochilus*. But we are confident that those who hereafter may have the opportunity of seeing numerous living species of that genus and *Eulophia* will concur with us that it is unavoidable; for, distinct as may appear the extreme forms of the two genera, there are yet so many intermediate forms that it is impossible to mark any limits. In a former number of this series the case of *Eulophia æqualis* (Lindley) Bolus, has already been mentioned. This species varies with broad and narrow petals. If an objector should desire to maintain the genus *Lissochilus* he would be compelled to place the broad-petalled form in *Lissochilus* and the narrow-petalled form in *Eulophia*. The presence or absence of a spur to the lip is a character subject to such gradation as to be of no value in either of these subtribes (see authorities quoted in Bolus, *Orch. Cape Peninsula*, p. 105). We have already both forms in *Acrolophia*, where *A. ustulata* is spurless, whereas all the other species are spurred.

Since Prof. Pfitzer has not given any details as to the species of *Acrolophia* we have looked through the species of *Eulophia*, and subjoin a synoptical table showing the manner into which we think the eight species which appear to belong to it should be arranged.

Respecting the geographical distribution of the genus we may observe that, with a single exception, the species all inhabit the south-western corner of the Cape Colony. None are found far inland, nor removed from the influence of the moist sea-breezes. The thick roots, which replace the tubers in *Eulophia*, appear to prefer invariably a light sandy soil.

Species of Acrolophia.

1. A. COMOSA.—*Eulophia comosa*, Sonder, in *Linnæa*, xix, p. 73.

2. A. SPHÆROCARPA.—*Eulophia sphærocarpa*, Sonder, in *Linnæa*, xix, p. 73.

3. A. TRISTIS.—*Eulophia tristis*, Sprengel, *Syst. Veg.* iii, p. 720; *Satyrium triste*, Linn. f., *Suppl.*, p. 402; *Limodorum triste*, Thunberg, *Prodr. Plant. Cap.*, p. 4.

4. A. LUNATA.—*Eulophia lunata*, Schlechter, in *Abhandl. Bot. Vereins Prov. Brand.*, XXXV, p. 45.

5. A. LAMELLATA.—*Eulophia lamellata*, Lindley, *Gen. & Sp. Orch.*, p. 184; Bolus, *Orch. Cape Penins.*, tab. 22, figs. 4–7, anal.

6. A. MICRANTHA.—*Eulophia micrantha*, Lindley, *Gen. & Sp. Orch.* p. 184; Bolus, *Icon. Orch. Austr. Afr.*, t. 4.

7. A. COCHLEARIS.—*Eulophia cochlearis*, Lindley, in *Comp. Bot. Mag.*, ii, p. 202, not of Steudel; Bolus, *Icon. Orch. Austr. Afr.*, t. 5.

8. A. USTULATA.—*Cymbidium ustulatum*, Bolus, in *Journ. Linn. Soc.* (*Bot.*), XX, p. 469; *Eulophia ustulata*, *ib.*, *Orch. Cape Penins.*, p. 110, t. 2.

KEY TO THE SPECIES.

§ 1. *Euacrolophia*.—Anther 2-horned; flowers spurred or saccate.

Bracts coloured . . . . . 1. A. COMOSA.
,, not coloured.
Capsule spherical . . . . . 2. A. SPHÆROCARPA.
,, ovoid or oblong.
Flowers 1–1·2 cm. long . . . . 3. A. TRISTIS.
,, 1·4–1·6 cm. long.
Column narrowed to the apex . 4. A. LUNATA.
,, widened ,, ,, . 5. A. LAMELLATA.

§ 2. *Acrolophiella*.—Anther without horns; flowers spurred or saccate.

Lip ovate . . . . . 6. A. MICRANTHA.
,, nearly square . . . . . 7. A. COCHLEARIS.

§ 3. *Pseudacrolophia*.—Anther without horns; flowers without spur or sac . . . . . 8. A. USTULATA.

BIBLIOGRAPHICAL NOTES.

VII.—WILLIAM YOUNG AND HIS WORK.

THE introduction of living specimens of *Dionæa* to England is due to William Young, of Philadelphia. The plant seems to have been discovered by Arthur Dobbs, Governor of North Carolina, who sent an account of it to Peter Collinson in a letter dated at Brunswick, Jan. 24, 1760.* Collinson subsequently received it from John Bartram, who in 1765 sent a specimen to Ellis,† whose published letter to Linnæus (dated Sept. 23, 1769) is well known. William Young brought over living specimens in the summer of 1768, and disposed of them to James Gordon, the well-known nurseryman of Fenchurch Street and Mile End, and to "Mr. Brookes in Holborn":‡ "a large cargo" of the plant seems to have been received by Gordon in 1769.§

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* *Hortus Collinsonianus*, 18.

† In the same year Bartram sent specimens to Solander for Collinson and the King, a list of which, in Solander's writing, is in the Department of Botany, as well as a specimen of the plant. In his MS. description Solander calls it *Dionæa crinita*.

‡ Ellis in *Correspondence of Linnæus*, ii. 73. § *Op. cit.* i. 248.

Little is apparently known of Young, his most important claim to distinction resting on a MS. volume containing 302 figures of plants, and a corresponding volume of specimens, both purchased by Banks from Lord Bute in 1794, and now in the Department of Botany of the British Museum. A brief entry of these appears in Dryander's Catalogue (iii. 186), but some fuller account of it may be worth putting on record.

The volume of figures has a title-page and dedication, which supply some material for forming an opinion of their author. The former runs thus :—

"A
Natural History of plants
Containing
The Production of North and South Carolina
of
Upwards of Three hundred Different Species
which have been Carefully Collected. Drawn
and Coloured from life in the Year 1767.
to which will be added a Description of the Soil
and Nature of their Growth, as likewise remarks
of a great many of their Medecinal Qualities with
a General Description of the Province
the whole By
William Young Junr. Esqre.
Botonist to their Majesty's."

To this succeeds the Dedication :—

"To
Their Most Excellent Majesty's
The
King and Queen of Great Britain &c. &c. &c.

Tis a Great Pleasure and Satisfaction to me to address this Work to your Majesty's or even to have it in my Power by the assistance of Devine Providence to show to Your Gracious Majesty's my Indefatigable Industry; which if minutely considered throughout the Spacious Plain of Nature, from whence I have Colled it will appear an Impossibility to the Common Comprehension of men; it may be consider'd that the 21st day of August 1766 I left London, and so begun this my Voyage to America which detain'd me near four months, then Traveled through North and South Carolina which is upwards of Eight hundred Miles distance from Philidelphia: the difficultys where I have labour'd under til this time are Manifold and have been Severe, whereof I shall make no enumeration here, but this I will refer to some other Convenient time.

But God is a Witness to all, and through his Blessing I have been Inabled to Surmount all Obstacles and have now Compleated my Designs this first day of December 1767; I would likewise have compleated the Description of all the plants with other remarks, but time will not permit of it at present so must refer it till I come to England, where I hope to reap applause on the whole; and so with a few lines will conclude.

Go the Whole World around and do proclaim my Name
for honour to the King and Country whence I Came
Reward I do not Claim, but such as is my due
for Plenty I enjoy, and that proceeds from you
For Immortality shall be my Constant Strife
And to Mankind do good whilest I partake of life

And so by Declaring Myself with the Most profound Duty and Respect I Remain
Your Most Gracious Majesty's
Most humble Servant
William Young Junr."

The figures in the book—"icones pictæ, rudes," as Dryander describes them—are of the crudest kind, and show that Young's

notions of drawing and colour were extremely elementary: the plants intended, however, are in most cases easily recognisable. Each is numbered: on an average there are three on a page, the volume containing 302 figures on 93 folios, each of which has at its foot, "Wm. Young Esqr. pinxit." The descriptive matter promised on the title-page was never supplied. At the end is "an alphabetical Catalogue containing the Generic and Classic Characters of all the plants throughout the Work." This description, however, is, to say the least of it, pretentious, as the catalogue only contains the generic or English name, or an indication of the Linnean class, of each figure, with many misspellings. The index is simply an enumeration of the pages in numerical order, with the names of the plants on each.

A few of the names are of Young's invention. *Dionæa*, for which no name had then been published, he called, after himself, *Youngsonia*; and he bestowed *Charlottella*, in commemoration of his royal patroness, on some species of *Habenaria*. At the end of the Index is "South Carolina, George Town, ye 1st December 1767. William Young Esqr."

The volume of specimens exactly corresponds, with one or two omissions, with the figures in numbering and arrangement. Its title runs:—"A Collection of Speciments from North and South Carolina, which are the Original Plants, and correspond with the Drafts in Page's and Numbers. Collected by William Young Junr. Esqr., Botanist to their Majesty's in the Year of our Lord 1767." Though small, they are in most cases sufficient, and are fairly well dried.

The impression derived from the above material is that of an uneducated vain self-asserting man; and the few printed records we have of Young confirm this estimate of his character.

We first come upon his name in the *Correspondence of Linnæus* (i. 512). Dr. Alexander Garden, who had pathetically lamented that in Carolina—"a country abounding with almost every sort of plant"—it "should not have pleased God to raise up one botanist," writes to Ellis on July 25, 1761:—"I have at last met with a man who is to commence nurseryman and gardener, and to collect seeds, plants, &c., for the London market. He is a sensible careful man, and has a turn for that business. He shall receive all the advice and assistance that I can give him. I must beg your interest in his favour; that you would bespeak what custom and commissions you can procure for him from your gardeners or nurserymen, or from any gentlemen who may want what our province affords. He wants much to be acquainted with Mr. Gray and Mr. Gordon at Mile-end; and I must beg that you would procure some commissions from them to him. He is to employ his whole time in procuring whatever may be ordered. His name is Young, and any letters for him inclosed to me, will be taken care of."

By what stroke of luck or exercise of interest Young received his speedy promotion we cannot ascertain, but we can gather some particulars of his rapid advancement and subsequent fall from the correspondence between Bartram and Ellis, as given in the

interesting *Memorials of John Bartram and Humphry Marshall*, edited (but alas! not indexed) by William Darlington, and published at Philadelphia in 1849. Young was apparently appointed "Botanist to their Majestys" in 1764, for on Sept. 23rd of that year we find Bartram writing:—"My neighbour Young's sudden preferment has astonished great part of our inhabitants. They are daily talking to me about him, that he has got more honour by a few miles' travelling to pick up a few common plants, than I have by me on thirty years' travel, with great danger and peril. It is shocking, the plants you have had, many of them known a hundred years, and most twenty or thirty, should be esteemed at Court as new discoveries. Several of my friends put me upon sending my new discovered specimens to the King, to try my success. Accordingly I have put up a little box of such specimens as I am sure he never found, and I believe never came to England, before I sent them."* On October 15th, Bartram again writes to Collinson:—"Various are the opinions of Young's success. Some think he will make such an awkward appearance at court that he will soon come back again. Others, that the Queen will take care of the German gentleman. I think that if he is put under Dr. Hill's care,† he will make a botanist, as he is very industrious and hath a good share of ingenuity." He then proceeds again to urge his claims:—"I hope thee will find some way to forward the box I sent to thee, for the King; not that I depend on having any such preferment as Young had, but chiefly as a curiosity, to see what difference will be made betwixt such rare plants as never grew in Europe or Asia, and such as have been growing in the English gardens between twenty and one hundred years past; for such, I believe, were most that Young sent. But I and several others would be greatly pleased with a list of what he sent, if it could readily be obtained."

It will be gathered from these extracts that Bartram was extremely and quite naturally jealous of Young's success; he was shortly, through Collinson's intervention, appointed "King's Botanist," with a yearly salary of £50. Young meanwhile seems to have settled in London, for Collinson says, under date Sept. 19, 1765:—"I have not seen Young for some time. I conclude he is prosecuting his botanical studies." Bartram, however, seems to have been still concerned about Young, for we find Collinson writing to him on May 28th, 1766:—"I wonder thou shouldst trouble thyself about the Queen, as she has Young, and everything will be shown him. It cannot be expected he will favour any one's interest but his own. He is now so new modelled, and grown so fine and fashionable, with his hair curled and tied in a black bag, that my people, who have seen him often, did not

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* Bartram's quaint spelling has been modernised throughout in the *Memorials*.

† Hill evidently accepted the charge, for he speaks of him (*Decade of Curious and Elegant Trees and Plants* (1763), p. 9) as "my pupil William Young."

know him. I happened not to be at home, so could not inquire what scheme he is upon."

At the end of 1766, Young returned to Philadelphia, more "fine and fashionable" than ever. "I am surprised," writes Bartram on Dec. 5th, 1767, "that Young is come back so soon. He cuts the greatest figure in town, struts along the streets, whistling, with his sword and gold lace, &c. He hath been three times to visit me—pretends a great respect for me. He is just going to winter in the Carolinas; saith there is three hundred pounds sterling annually settled upon him. But Captain Chancelor tells odd stories of him: that he was put in prison, from whence he was taken by two officers, and put on board ship; but his friends utterly deny it. It's pity but the truth was known, and the lying party snubbed." Collinson in reply (Feb. 10, 1767) says:—"I believe there is too much truth in what the Captain says about Young. He may live to repent his folly and extravagance. Such an opportunity lost is never to be regained, unless he has better fortune than he deserves. As a friend, I advised him often to economy and industry, and not sacrifice everything to his pleasures; for I foresaw, by his way of going on, how it must end; for I knew his salary could by no means support his expensive way of living."

With this Young drops out of the correspondence. The dedication of his "Natural History of Plants" gives us the date of his leaving England for Philadelphia (Aug. 21, 1766); and, in the face of Collinson's remarks, we shall not be far wrong in reading in that dedication a plea for a continuance of the favour which he must have felt in danger of losing. In 1768 he returned to England, bringing with him, as has already been mentioned (p. 332), a large number of plants of *Dionæa*. "We are indebted to Mr. William Young," says Ellis,* "to whom likewise the Royal favour has been extended, for his encouragement in his botanical researches in America, for the introduction of this curious plant alive, and in considerable quantities." On this introduction indeed, Young's fame chiefly rested, and it is in connection with it that we find the latest reference to him in print. Hill (*Decade*, &c., p. 9 (1753)), writing of plants received in 1772, says:—"When my Pupil, William Young, to whom the King is pleased to allow a pension, for his Botanical researches in America, first told our wondering gardeners that he had seen the Dionæa with Leaves three inches long; 'twas look'd on as a fable: but it is prov'd a truth, by Specimens, which were gather'd this last summer, on a bog in Pennsylvania. . . . 'Twas from the old and excellent John Bartram we first had Knowledge of the Dionæa; but its strange powers were never comprehended till the living Plants came to us, under the care of this W. Young."

In a letter of John Bartram's in the Department of Botany—one of seven to Fothergill not printed in the *Memorials*—dated May 17, 1771, we read, "William Young stiles himself Botanist to their Majesties the King and Queen of Gt. Britain." We are inclined to

* *Dionæa*, p. 38.

infer from this and from Hill's reference to "a pension" that Young's active services had been dispensed with, but that he still retained his title: but we know no more of him. In the ten years of his life of which we have any record he had risen from "nurseryman and gardener" to the dignity of a bag-wig, sword, and gold lace. His most enduring memory will be found in the two volumes which are now for the first time fully described.

JAMES BRITTEN.

POTAMOGETON RIVULARIS Gillot.

By Alfred Fryer.

Recently Mr. Bennett sent me specimens of a *Potamogeton* which he had received from Dr. Magnin, labelled "*P. rivularis* Gillot, Montemerle, Saône et Loire, France, 1883, leg. Dr. Gillot," with a request for my opinion thereon. At the first glance I was struck by the resemblance these specimens bore to *P. lanceolatus*, and after a long comparison with many species and hybrid forms of *Potamogeton*, I wrote to say that the plant was probably a form of *lanceolatus*, but my own herbarium did not afford sufficient means for a thorough comparison. My friend, by way of reply, kindly sent me the matchless set from his own herbarium, together with the many notes and letters from eminent botanists on the Burwell Fen form of the true *P. lanceolatus* Smith.

With these valuable aids I was not only able to regard the *P. rivularis* as a variety or state of *P. lanceolatus*, but I acquired what seemed to me strong evidence in favour of a view I have long held, that *lanceolatus* itself is a hybrid rather than a true species. To these opinions Mr. Bennett replied, "I entirely agree with you as to *P. rivularis* being so near *lanceolatus* (of course *we* understand they may not be absolutely identical), that it seems impossible to separate them in the aggregate." To the question of *hybridity* my friend made no reply, but shortly afterwards wished me to send a note on *P. rivularis* to the *Journal of Botany*. I think I do not err in interpreting the request of my friend that I should undertake a task so obviously his, to a desire on his part that the whole subject should be fully ventilated, and that the possibly erroneous views I entertain should neither be ignored nor supported by him. I trust this explanation will be sufficient to acquit me of the charge of presumption in writing about a subject which Mr. Bennett has made essentially his own.

For the purpose of enabling students to understand the views I wish to express in this note, it will be necessary to give, in the first place, a short description of each of the two forms:—

Potamogeton rivularis Gillot.	Potamogeton lanceolatus Smith.
Stem filiform, somewhat compressed, dichotomously branched, internodes shorter than the subtending leaves.	*Stem* very slender, compressed or flattened, with secondary branchlets, internodes sometimes longer than the subtending leaves.

POTAMOGETON RIVULARIS Gillot.

Lower leaves alternate, flat, entire, linear-lanceolate, gradually narrowed towards the base, more abruptly towards the blunt or subacute apex, with glands at the base. 3–5-ribbed, with elongate cancellations on each side of the main rib, with sparse irregular ascending cross-nerves.

Upper leaves alternate, floating, subcoriaceous or membranous, very long stalked, rarely sessile, elliptical-lanceolate, with glands at base of petiole, lamina fenestrate.

Stipules slender, scarious, blunt, almost truncate.

Peduncles (no flower-spikes on any of the specimens).

Colour of the whole plant olive-green.

POTAMOGETON LANCEOLATUS Smith.

Lower leaves alternate, flat, entire, linear-lanceolate, gradually narrowed towards the base, abruptly so towards the blunt apex, with glands at the base. 3–5-ribbed, with elongate cancellations on each side of the main rib, with sparse irregular ascending cross-nerves.

Upper leaves alternate, opposite beneath peduncles and forks of branches, floating, subcoriaceous or membranous, short-stalked or sessile, oblong-lanceolate, glandular at base, lamina fenestrate.

Stipules slender, scarious or herbaceous, blunt, almost truncate.

Peduncles short, equal, spike very short, apparently barren. "*Dry drupelets ventrally 3-toothed*" (Bennett).

Whole plant olive-green.

The above brief descriptions include all the essential characters of each form; it will be seen that the stipules are described as *blunt*, not acute, as described by other writers, and the remarkable *glands at the base of each leaf* are noticed. The description of the drupelets is copied from Mr. Bennett's account in Hooker's *Student's Flora*, ed. 3. From the beautiful drawings of these made by Mr. Bennett, I incline to think the drupelets are not fertile, but are rather of the nature of those produced on such hybrid forms as *P. decipiens* and *P. nitens*. This is a matter which requires further investigation; but practically the British forms of *P. lanceolatus* are barren, and I believe no ripe drupelets have ever been noticed.

The differences between the French and British plants are so slight that, if compared with different *states* of such forms as *P. varians* gathered from the same rootstock at different seasons, they are scarcely varietal; yet the *habit* of each is somewhat different, and may possibly be constant. For this reason I am not prepared to sink the name *rivularis* entirely, but on present evidence to call the Montemerle plant, P. LANCEOLATUS var. RIVULARIS.

Much importance has been given, by those interested in the geographical distribution of plants, to the fact that hitherto *P. lanceolatus* has only occurred in the British Isles; and also the local distribution in these islands has seemed to present difficulties that could not be readily explained. Perhaps the true solution of the questions that here arise may be found if we examine the relation *P. lancifolius* bears to the other British species of *Potamogeton*.

These have been divided by Dr. Boswell Syme into four sections:—(1) *Plantaginifolia*, including the species from *natans* to *crispus*; (2) *Oppositifolia*, including *densus* only; (3) *Graminifolii*, including the species from *zosterifolius* to *trichoides*; (4) *Pectinati*, including *pectinatus* to *filiformis*. Now, to which of these sections does *P. lanceolatus* belong? Looking at the mature plant, undoubtedly to Section 1, *Plantaginifolia*. But if we examine the plant more closely we find one remarkable character, *glands at the base of each leaf or leaf-stalk*, a character found in no other species in this section, but absent in no species of the Section 3, *Graminifolii!* Taking this into account, and looking at the young submerged growths of *lanceolatus* which have the habit of those of *Friesii*, I long ago began to regard this form as a possible hybrid. Then came the fruit "*ventrally 3-toothed*," another striking character belonging to Section 3, all the fruits of which are more or less toothed towards the base. The case in favour of the hybrid origin of *P. lanceolatus* is strongly supported by the local distribution of the species. In what locality does it form a general feature in the flora of the district? Is it not always confined to a single river, stream, or ditch? In Burwell Fen, to a single plant even, for the one spot where Mr. Bennett found it might well have been filled by a single rootstock.

I have repeatedly searched Burwell Fen for *P. lanceolatus* without success; the ditch where Mr. Bennett found it has now closed up, and its aquatic vegetation is extinct, but a long series of watercourses forming a continuation of that ditch still exist, and they contain no trace of *lanceolatus*. It is not difficult to form a theory that might explain the occurrence of a rare species in the Isle of Anglesea and in Burwell Fen, but such a theory is destroyed by the Saône and Loire discovery. Again, although all the specimens from the various localities are good *lanceolatus*, each locality has its own peculiar form; presenting, in fact, just such slight indefinable differences as we see in such hybrids as *decipiens*, though in a *far less marked degree*.

If, then, we regard *P. lanceolatus* as a hybrid between *P. heterophyllus* and some one or other of the "*Graminifolii*," both the peculiarities of the species and the difficulties presented by its distribution will be explained. I think the Burwell Fen form is *heterophyllus* × *Friesii*, ♂; possibly the Anglesea form may be *heterophyllus* × *pusillus*.

My friend Mr. Bennett has kindly supplied me with information which may be thought to weigh against the view I take—such as the apparent absence of the other necessary forms of *Potamogeton* in some of the British localities of *lanceolatus*. At one time this absence would have had great weight with me; but some years ago, in the case of a hybrid violet, Mr. Beeby pointed out to me that a hybrid might long survive the extinction of one or both of its parent species. I almost doubted this, but kept the suggestion in mind, and watched the distribution and growth of that hybrid violet throughout the fens; I soon found abundant evidence that in localities where through drainage one of the parent plants was

dying out, the hybrid was increasing by its ability to grow more freely under the very conditions which were destroying one of its parents. Every field-botanist can call to mind similar instances; in Potamogetons they are frequent!

In a genus the species of which are so widely distributed as those of *Potamogeton* are, we must not expect to find "endemic" forms at all frequent. When the genus is more carefully collected, will a single species be found restricted to any one locality, or wide district even? Many of the so-called species will be found to be combinations of other species—that is, *hybrids*. I propose to write the name × *Potamogeton lanceolatus*, and think that it is likely to occur wherever the two parents grow; if this view is correct, the importance of its distribution ceases, as far as geographical botany is concerned.

FIRST RECORDS OF BRITISH FLOWERING PLANTS.

COMPILED BY

WILLIAM A. CLARKE, F.L.S.

(Continued from p. 309.)

Salix.—In this genus I deal only with the seventeen species to which it has been reduced by Dr. Buchanan White in Journ. Linn. Soc. xxvii. 333–457.

Salix pentandra L. Sp. Pl. 1016 (1753). **1641.** "Salix folio laureo, sive lato glabro odorato folio, nondum descripta. Willow Bay."—Johns. Merc. Bot. pars alt. 32. "At Wolverhampton."—How, Phyt. 108 (1650).

S. fragilis L. Sp. Pl. 1017 (1753). **1660.** "Salix folio lato splendente fragilis—vulgo Cantabrigiensi *The Crack Willow* dicitur."—Ray C. C. 143.

S. alba L. Sp. Pl. 1021 (1753). **1597.** "In divers places of England."—Ger. 1205. But see Turn. Herb. ii. 125, back.

S. triandra L. Sp. Pl. 1016 (1753). **1670.** "Salix humilis corticem abjiciens. Near the small brook that runs into the River at Darking in Surrey. Th. Willisell."—Ray, Cat. 272.

S. purpurea L. Sp. Pl. 1017 (1753). **1660.** "In the osiar-holts by the river Cams side."—Ray C. C. 146. "Thorpe Meadows near Norwich. Mr. Crowe."—With. Bot. Arr. ed. 3, 45 (1796).

S. viminalis L. Sp. Pl. 1021 (1753). **1632.** "S. vulg. longis et angustis foliis. Hampstead."—Johns. Enum.

S. cinerea L. Sp. Pl. 1021 (1753). **1804.** "Specimens from Cumberland and from Fream Wood are in Mr. Lightfoot's herbarium."—Sm. Fl. Brit. iii. 1063.

S. aurita L. Sp. Pl. 1019 (1753). **1724.** "Salix folio rotundo minore . . . in sepibus prope Chisselhurst. Dr. Dillenius."—Ray Syn. iii. 450.

S. Caprea L. Sp. Pl. 1020 (1753). **1597.** "In divers places of England."—Ger. 1205.

S. phylicifolia L. Sp. Pl. 1016 (1753). **1802.** "At Finlarig, Bredalbane. Rev. Mr. Stuart."—Sm. in Linn. Soc. Trans. vi. 123.

S. repens L. Sp. Pl. 1020 (1753). **1597.** "At the further end of Hampsteed heath."—Ger. 1205.

S. lanata L. Sp. Pl. 1019 (1753). **1828.** "On rocks in the Highlands of Scotland."—Sm. Eng. Fl. iv. 205.

S. lapponum L. Sp. Pl. 1019 (1753). **1777.** "On the Highland mountains. Mr. Stuart."—Lightf. Fl. Scot. ii. 604.

S. Arbuscula L. Sp. Pl. 1018 (1753). **1804.** "In alpibus Scoticis. D. Dickson."—Sm. Fl. Brit. iii. 1050.

S. Myrsinites L. Sp. Pl. 1018 (1753). **1777.** "Upon the Highland mountains as upon Ben Achulader, in Glenurchy." Mr. Stuart."—Lightf. Fl. Scot. ii. 599.

S. herbacea L. Sp. Pl. 1018 (1753). **1670.** "On Ingleborough-hill on the highest Rock next to the Beacon, and on a hill called Whern-side over against Ingleborough-hill. Th. Willisell."—Ray, Cat. 273.

S. reticulata L. Sp. Pl. 1018 (1753). **1777.** "Upon many of the Highland mountains."—Lightf. Fl. Scot. ii. 601. Ray's records quoted in Sm. Eng. Fl. refer to *S. herbacea*.

Populus alba L. Sp. Pl. 1034 (1753). **1597.** "Not very common in England. I found many in a lowe medow . . . at the further end of a village called Blackwall, from London," &c.—Ger. 1302.

P. canescens Sm. Fl. Brit. iii. 1080 (1804). **1597.** This is the "other sort of Poplar" described by Ger. p. 1302, and figured in Ger. em. 1487; the figure is cited by Smith, *l. c.* "In low moist places, as in medowes neere unto ditches, standing waters, and rivers."—Ger. *l. c.*

P. tremula L. Sp. Pl. 1034 (1753). **1538.** "Populus alba . . . dicitur ab Anglis an aspe aut an esp tre."—Turn. Libellus.

Empetrum nigrum L. Sp. Pl. 1022 (1753). **1597.** "Heath which beareth berries groweth in the north parts of England, namely, at a place called Crosbie Ravensworth."—Ger. 1199. "I found this growing in great plenty in Yorkshire on the tops of the hills of Gisbrough."—Johnson in Ger. em. 1383 (1633).

Ceratophyllum demersum L. Sp. Pl. 992 (1753). **1660.** "In aquis pigrioribus fere ubique."—Ray C. C. 49.

C. submersum L. Sp. Pl. ed. 2, 1409 (1762). **1724.** "In fossis juxta viam quæ ab urbe Chichester ad Insulam Selsey ducit observavere D. Manningham & D. Dillenius."—Ray Syn. ed. 3, 135.

Juniperus communis L. Sp. Pl. 1040 (1753). **1548.** "Groweth . . . in many places of Englande."—Turn. Names, D vij. "Most plentuouslye in Kent," &c.—Turn. ii. 25.

J. nana Willd. Sp. Plant. iv. 854 (1805). **1670.** "On Snowdon hill in Wales, and upon the hills in Westmorland, near the Fell-foot."—Ray Cat. 182.

Taxus baccata L. Sp. Pl. 1040 (1753). **1538.** "Taxus, an Uhe tree, unde hodie apud nos fiunt arcus."—Turn. Libellus. "Comune Ughe groweth in diverse partes of Yorke shyre."—Turn. Names, G vj.

Pinus sylvestris L. Sp. Pl. 1000 (1753). **1640.** "In Scotland . . . as I have been assured."—Park. Theatr. 1540.

Elodea canadensis Mich. Fl. Bor. Amer. i. 20 (1803). **1847.** "Discovered by Miss [Mary] Kirby in ponds on reservoirs near Toxton [Foxton] Locks Canal, near Market Harborough, Leicestershire, in October," 1847.—Phytol. ii. 1044. "In the Whitadder, and ponds Dunse Castle, Berwickshire, by Dr. Johnstone, some years ago."—M. Kirby, Fl. Leicestershire, 148 (1850). In a pond at Waringstown, Co. Down, "about eighteen years ago."—G. Dickie in Phytol. v. 88 (1854).

Hydrocharis Morsus-ranæ L. Sp. Pl. 1036 (1753). **1570.** "Ad arcem Londini regiam & mœnia."—Lob. Adv. 258.

Stratiotes aloides L. Sp. Pl. 535 (1753). **1633.** "I found this . . . in the ditches about Rotsey a small village in Holdernesse and my friend Mr. Willm. Broad observed it in the fennes in Lincolnshire."—Johnson, Ger. em. 825.

Malaxis paludosa Sw. in Handl. Acad. Stockh. x. 127 (1789). **1640.** "In the low wet grounds betweene Hatfield and S. Albones; in divers places of Romney Marsh."—Park. Theatr. 505.

Liparis Loeselii Rich. in Mem. Mus. Par. iv. 60 (1818). **1660.** "In the watery places of Hinton & Teversham Moors" (Cambs).—Ray C. C. 106.

Corallorhiza innata R. Br. in Ait. Hort. Kew. ed. 2, v. 209 (1813). **1777.** "In a moist hanging wood near the head of Little-Loch-Broom, on the western coast of Ross-shire."—Lightf. Fl. Scot. 523.

Neottia Nidus-avis Rich. in Mem. Mus. Par. iv. 52 (1818). **1597.** "I found it growing in the middle of a wood in Kent two miles from Graves end."—Ger. 176.

Listera cordata R. Br. in Ait. Hort. Kew. ed. 2, v. 200 (1813). **1666.** "Neer the Beacon on Pendle Hill in Lancashire."—Merrett, 15.

L. ovata R. Br. in Ait. Hort. Kew. ed. 2. v. 201 (1813). **1548.** "Martagon . . . in many places of Englande in watery middowes and in woddes."—Turn. Names, H iij, back.

Spiranthes autumnalis Rich. in Mem. Mus. Par. iv. 59 (1818). **1548.** "Groweth besyde Syon (Middlesex) . . . it is called Lady traces."—Turn. Names, F viij, back.

S. æstivalis Rich. in Mem. Mus. Par. iv. 59 (1818). **1840.** At the meeting of the Linnean Society on Nov. 17, 1840, "Mr. Janson exhibited a specimen discovered in August last by himself and Mr. Branch, near Lyndhurst, Hampshire."—Proc. Linn. Soc. i. 80.

S. Romanzoffiana Cham. in Linnæa, iii. 32 (1828). **1828.** "Near Castletown, opposite to Bearhaven on the northern side of Bantry bay, County of Cork. Mr. Drummond. . . . communicated to me in August 1810."—Sm. Eng. Fl. iv. 36.

Goodyera repens R. Br. in Ait. Hort. Kew. ed. 2, v. 198 (1813). **1777.** "We found it . . . in an old shady moist hanging birch wood . . . facing the house of Mr. Mackenzie of Dundonald about two miles from the head of Little-Loch-Broom on the western coast of Ross-shire."—Lightf. Fl. Scot. 520.

(To be continued.)

SHORT NOTES.

Hydnum erinaceum. — A specimen of this fungus weighing 22 lbs. 6 oz. has been sent to the British Museum by Miss Mabel de Grey, who collected it. It was growing inside the hollow stem of a beech at Lyndhurst. I do not know of any specimen approaching this one in dimensions; and though of such great size, it is in no way abnormally developed.—George Murray.

A Bibliographical Note.—The differences between the first and the second editions of the *Transactions and Proceedings of the New Zealand Institute*, vol. i., are sufficiently startling to be worth recording. The first issue came out in May, 1869, with a preface deprecating criticism on its typography and general arrangement; the latter is especially open to adverse remark, for the volume consists of introductory matter (pp. xviii.), the Governor's Address and Proceedings (pp. 1–202), and part iii., which is devoted to essays, eight in number, each separately paged. This issue speedily becoming exhausted, a second edition was brought out in 1875, with a short preface as follows:—"The original edition of the first volume of the *Transactions and Proceedings of the New Zealand Institute* having long been exhausted, the Governor, at the request of the Board of Governors, undertook its republication. As will be seen, the arrangement of the first edition has been somewhat changed. No extensive alterations have, however, been made in the papers as originally published, and wherever at the request of the authors any corrections have been made which were not merely verbal, the words added have been put in italics, after those to be omitted, which are in square brackets." The above is the whole of the preface, which is dated Wellington, 31st May, 1875; the arrangement is pp. xvii. 1–493, without any indication of the original pagination. The first plan was to the last degree objectionable, but the second issue should have noted the original pages in some fashion. This omission is, however, pardonable; not so the following. I have found no less than ten new species of plants are given in the second edition which are only alluded to in the first. To take one example:—"Another undescribed *Pittosporum* was obtained here," in the second edition is expanded thus, "Another *Pittosporum* (*P. ellipticum*, Kirk, var. *ovatum*) was obtained here." The editorial preface as given above is most ingeniously contrived to mask these interpolations (which deceived me for years), by saying, " . . . the words added have been put in italics," for this covers the whole of the additions here noted, all the Latin names of plants being in italics.—B. Daydon Jackson.

"Societas Phytographica."—Can any reader give me some information about this Society? I have not succeeded in tracing it in any library in London, nor in either edition of Pritzel's *Thesaurus*, Scudder's *Index of Scientific Serials*, Bolton's *Catalogue of Scientific Periodicals*, nor even in Berg's *Catalogus Bibliothecæ Horti Imperialis botanici petropolitani* (1852), nor Trautvetter's *Floræ Rossicæ fontes*. Thunberg himself alludes to it in his *Flora Capensis*,

but the only definite statements known to me are the undercited extracts from the same authority:—"Societas phytographica Gorenkensis, seit 1809 (Praesident, Graf Razoumoffsky; Director, Prof. F. G. Hoffmann; Secretair, F. C. L. Fischer)."—Schultes, *Gesch. der Botanik*, p. 14. "(1) Gramina capensia, 1811, cum t. (2) Trachelium, Samolus, Polemonium, Roella, 1811, cum t. 4. (3) Lobeliæ capenses, 1811, cum fig. 11. (4) Rhamni capenses, c. fig. color. 1812. (5) Solana capensia cum fig. 1 color. 1812. (6) Celastri novæ species capenses 1812, cum fig. 5 color."—Thunberg, *Fl. Cap.* ed. Schult. p. xxix.—B. Daydon Jackson.

Derbyshire Records.—Not having examined all the pages of the Rev. W. H. Painter's *Contribution to the Flora of Derbyshire* at the time I first received the book, I overlooked until recently the strange misstatement made, as on my authority, at p. 99, that *Lysimachia vulgaris* occurs on the rocky slopes of the Dove Valley, from 600 to 1000 ft. As I have never met with *L. vulgaris* in either Derbyshire or North Staffordshire, save as a garden plant, I was curious to ascertain how this mistake could have arisen; and I find on turning to an article on Dovedale plants in this Journal for 1885, p. 199 (from which article Mr. Painter has made various extracts), that he must have transferred to *Lysimachia vulgaris* the words I had used concerning *Ligustrum vulgare*, since I had not mentioned the loosestrife at all. Whilst writing, I will take the opportunity of saying that *Valerianella carinata*, of which Mr. Painter (probably following Mr. H. C. Watson's view) says at p. 69, "Casual, an escape from cultivation," is to all appearance as wild as anything else on the limestone rocks of Derbyshire and N. Staffordshire, not indeed occurring so frequently or so plentifully as *V. olitoria*, but nevertheless in stations far enough from cultivation. The Rev. A. Ley lately showed me specimens gathered by himself some years back in Deepdale and other stations near Buxton. Mr. Painter says that *Nepeta Cataria* "wants confirmation." I have seen this plant on a rough bank near the Tickenhall lime quarries, as recorded in my list of S. Derbyshire plants printed in this Journal for 1887, p. 141. My list was made whilst still living in S. Derbyshire. I also have a distinct recollection of seeing the plant in the place mentioned, and I think I saw it there in more than one season.—W. H. Purchas.

Arenaria gothica.—I found in September numerous specimens of *Arenaria gothica* in full flower on the mountain limestone about Sulber Nook, between Clapham and Selside, at the foot of Ingleborough, on the eastern side. The localities in England already recorded are a few miles distant from the spot where I discovered it. —Reginald T. Farrer.

Kissenia spathulata. — The finding of this plant at Alrail, Hadramaut Valley, is recorded in the *Bulletin of Miscellaneous Information* for September (p. 332), with the remark, "Only known before at Aden and the Cape." We have in the British Museum specimens collected in Dammara-land by T. G. Een in 1879.—James Britten.

HALICYSTIS OVALIS.—This plant, found two years ago for the first time in British seas (Clyde Sea area) by Mr. George Murray and Dr. Schmitz (*Phycological Memoirs*, pt ii., 47), has been rediscovered by Mr. David Robertson at Lamlash, in Arran. The original find was in 8–11 fathoms, and Mr. Robertson's specimens were obtained from 7 fathoms.

POTAMOGETON NITENS IN CAMBRIDGESHIRE.—Early in September I was busily engaged in searching the fens for × *P. lanceolatus*, but without success. But I was rewarded by finding about two miles of drain and ditch in which *P. nitens* grew plentifully. The locality is Blackbush Drove, near Whittlesea, v.-c. 29. The other Potamogetons in the drains are *natans*, *lucens*, *heterophyllus*, *perfoliatus* (these two in abundance), with some few *crispus*, and a fair quantity of *Friesii*. Of hybrid forms, a *single stem* of *decipiens* occurred (the plant was not old enough to produce two), and a very peculiar looking *Zizii* was rather plentiful. The *nitens*-form evidently was not all due to one cross, but occurred in patches along the drain where *heterophyllus* and *perfoliatus* grew intermixed. Like all our Fenland Potamogetons, the Whittlesea *nitens* is a very peculiar plant, with an extraordinary development of coriaceous floating leaves, which fully bear out Weber's comparison of his species to *P. natans*, which has puzzled so many botanists. I hope to be able to figure and describe this plant in some future number. —ALFRED FRYER.

SAXIFRAGA NIVALIS L. (p. 302). — The Messrs. Baker give the height of 1500 ft. as the lowest elevation at which this is recorded; but at the Aberdeen Natural History Society, Jan. 19, 1886, Dr. Roy recorded it at "1200 ft. in the N.W. of Skye." It occurs in Mid-Perth at "1900 ft." (Macvicar *in litt.*).—ARTHUR BENNETT.

We are assured on excellent authority that *Saxifraga nivalis* is still to be found amongst the hills east of Appleby at an elevation of between 400 and 500 yds. above sea-level. This brings it distinctly within the Super-agrarian zone. A height of 1200 ft. in Skye would be on the line of upper limit of this zone. In the Lake district it is, I believe, confined to the Infer-arctic zone. I have only seen it myself on the western cliffs of Helvellyn at 800–900 yds. Watson gives it only from the two highest of his six zones. To these we may now safely add the two middle ones.—J. G. BAKER.

NOTICES OF BOOKS.

Memoirs and Memoranda, chiefly Botanical. By DAVID PRAIN. Reprints from Periodicals, 1887–1893. Calcutta: Baptist Mission Press. 1894. Pp. 1–406, with the original maps and plates, and a General Index to the whole added.

THIS very convenient reprint contains seventeen of Dr. Prain's smaller papers—in fact, all those published between 1887 and 1893, except the strictly systematic. These smaller systematic papers will shortly be published in a similar volume, entitled *Noviti*æ

Indicæ. The larger monographs of Dr. Prain, of which each forms a sufficiently large volume by itself, it is not proposed to reissue.

Each paper is published complete, with the original paging, and its original index, if any; while there is a current paging added at the bottom of each, page to which the general index refers. The largest space is occupied by the following papers:—I. The non-indigenous species of the Andaman Flora (pp. 26). IX. The Vegetation of the Coco Group (pp. 168). XIV. On the Flora of Narcondam and Barren Island (pp. 47). XV. Botany of the Laccadives (pp. 88). Other papers refer to the Botany of the Andaman and Nicobar Islands, and of Diamond Island (which lies between the Andamans and Pegu). A considerable portion of the whole volume is thus concerned with the "Andaman Sea" of Prain—an area cut off from the Malay Peninsula and Burma by a narrow sea-depression of at least 3000–6000 ft. The flora of each island consists of indigenous, accidentally introduced, and cultivated species.

The papers of Dr. Prain enter fully into the questions of general scientific interest regarding the manner of arrival of species on islands, their establishing themselves there, and the permanence of their establishment. Dr. Prain compares the present state of the colonist vegetation with that recorded by botanists who formerly visited the islands, and gives numerous extensive tables showing the distribution of colonists (and suspected colonists) in adjacent islands and countries. Where the indigenous flora offers to the botanic traveller more objects of attention than he has time to study satisfactorily, he too frequently neglects the cultivated plants and weeds—at least as likely to throw light on many points of geologic and practical interest as the detecting and describing new and critical species.

The title-page of the present volume says, "chiefly botanical," and it might have said, "all botanical, except the first." This is on the "Angami Nagas," and is an account of the English district in Assam called officially the "Naga Hills," and more especially of its inhabitants. The account given of the chief tribe, the Angami Nagas, is most accurate, as Dr. Prain was stationed there for a year in this district in the early part of his career. It is of the greater value and wider interest in that much that he states regarding the Angami tribe, their religion, domestic customs, &c., holds for all "Kookies" (the name under which Col. McCulloch included all the Indo-Chinesehill-men from the Gatos at the bend of the Brahmapootra to the hill-Chinese in South-west China), and indeed to a great extent for the hill-men of the eastern half of the Himalaya. The Angami Nagas differ from the Kookies west of them by their partiality for eating dog. All the Kookie tribes are (as we first find them) without any organised government, with no religion but a belief in wizards and evil spirits, head-takers with no respect for human life, treacherous—in a word, thorough savages; but they become "tame" very quickly—they recognise at once the value of a government which protects life and property, and gladly receive the missionary or any other person who will instruct them in the arts of civilization.

These shorter papers of Dr. Prain contain much that is of interest to botanists and to others; and the manner of republication (retaining the old pagination, with the addition of a general index to the volume) is a model for adoption in similar reprints.

C. B. CLARKE.

Studies in Forestry; being a short course of Lectures on the Principles of Sylviculture, delivered at the Botanic Garden, Oxford, during the Hilary and Michaelmas Terms, 1893. By JOHN NISBET, D.Oec. Oxford: Clarendon Press. 1894. 8vo, pp. ix, 355. Price 6s.

IF English scientific and technical literature a short time ago was as poor in works on forestry as England itself is deficient in State forests, Dr. Nisbet has of late been doing his best to redeem it from this reproach. So rapidly indeed have considerable works on forestry, translated and original, been issuing from his pen, that some fear is perhaps excusable lest he should merely repeat himself, and create a supply in excess of the demand. As he himself says in the preface to the present work, it "will be apparent throughout every chapter" that his "convictions regarding economic forestry, *i. e.*, sylviculture, have been formed in a Teutonic school"; but this is, to us, as the author says it ought to be, a matter of perfect indifference. It is, however, a satisfaction that, though the inspiration is German, the book itself is English, and no mere translation or adaptation in semi-Anglicised language. We must congratulate Professor Vines on having arranged for the delivery of these lectures at the Oxford Garden, which has so many associations with rural economy; but we are glad to say that Dr. Nisbet has not left his work in the lecture form, but has amplified it by the incorporation of his six Essays on Sylvicultural Subjects, published by the Indian Government last year, which would otherwise perhaps have been little known save to Indian Forest Officers.

The fourteen chapters into which the book is divided, though necessarily brief and suggestive rather than exhaustive, and without any illustrations, cover a large part of the field of sylviculture, and do so in systematic order. They deal with forestry in Britain as an economic question, with the cultural characteristics of our British forest trees, their food, the influence of soil and situation, the advantages and treatment of mixed timber-crops, and other cognate questions of management; and the two concluding chapters are devoted to their fungoid and insect enemies. Fortunately some of these diseases, though common in Germany, are as yet rare in this country.

We can perhaps best serve Dr. Nisbet's purpose by re-stating here two or three of the leading conclusions at which he arrives, which he enforces with a wealth of detailed fact, and with which we most cordially agree. Firstly, with the present fall in the value of land, there is now scope for applying a knowledge of sylviculture to large tracts now unproductive. Secondly, mixed woods are more profitable than pure forest. Thirdly, it is important to

maintain "close canopy" until the crop has completed its chief growth in height, and then to adopt partial clearances and under-planting in order to maintain the productive capacity of the soil. These are, however, matters of purely practical interest, and there is little botanical matter in the work that calls for special notice. It is pre-eminently a book that land-owners, estate-agents, and foresters should not only read, but consider with care.

G. S. Boulger.

ARTICLES IN JOURNALS.

Annals of Scottish Nat. Hist. (Oct.).—P. Ewing, 'Some forms of *Ranunculus Flammula*.' — E. F. Linton, 'Origin of *Salix Grahami*.' —J. Roy & J. P. Bisset, 'Scottish *Desmidieæ*' (concl. : 1 pl.).

Bot. Centralblatt. (No. 39). — (Oct. 11). G. von Istvánffi, ''Steerbeck's 'Theatrum Fungorum.'' — (No. 40 : Sept. 18). R. Meissner, 'Zur Frage nach den Orientirungsbewegungen zygomorpher Blüten.'—(Nos. 41, 42 : Oct. 3). A. Meyer & A. Dewère, '*Drosophyllum lusitanicum*.' — P. Kunth, 'Nach untersuchung der Blüteneinrichtung von *Lonicera Periclymenum*.'—(No. 43 : Oct. 11). J. B. Jack & F. Stephani, 'Hepaticæ in ins. Vitiensibus & Samoanis a Graeffe lectæ' (1 plate).

Bot. Mag. (Tokio). — (Aug. 20). Mitsutarō Shirai, 'Japanese species of *Betula*' (*B. globispica*, sp. n.).

Bot. Zeitung (Oct. 16).—H. Molisch, 'Das Phycoerythrin, seine Krystallisirbarkeit und chemische Natur' (1 pl.).

Bull. de l'Herb. Boissier (No. 9 : Sept.). C. DeCandolle, 'Meliaceæ novæ' (*Entandrophragma*, gen. nov. : 1 plate). — R. Chodat, 'Matériaux pour servir à l'histoire des Protococcoidées' (8 plates).

Bull. Soc. Bot. Belgique (xxxiii. : Oct. 19). — F. Crépin, 'Rosæ hybridæ.'—Id., '*Rosa Fischeriana & R. gorenkensis*.'—Id., 'Les Roses de l'Angleterre.' * — J. Massart, 'Embryologie végétale' (3 plates). —E. de Wildeman, '*Trentepohlia polymorpha*.' — Id., 'La Flore de Bulgarie.'—E. Laurent, 'Le Bas-Congo.'

Bull. Soc. Bot. France (xli, 6, 7 : Sept.). — L. Guignard, 'Propriétés chimiques de la myrosine.' — E. Gain, 'Plantule anormale de *Quercus pedunculata*.' — Id., 'Sur la variation du pouvoir absorbant des graines.' — M. Molliard, '*Bromus secalinus* infesté par *Phytoptus dubius*.' — P. Vuillemin, 'Association parasitaire de l'*Æcidium punctatum* et du *Plasmopara pygmæa* chez l'*Anemone ranunculoides*.'—X. Gillot, 'Notes tératologiques.' — E. Rose, 'Recherches sur les *Ruppia*' (1 pl.). — P. van Tieghem, *Aciella*, *Chiridium*, *Coleobotrys*, *Sycophila*, *Lanthorus*, *Pilostigma*, *Ileostylus*, *Peraxilla*, *Diplatia*, *Leucobotrys*, *Stemmatophyllum*, *Amyema*, *Neophylum*, gen. nov. (*Loranthaceæ*). — J. A. Battandier, 'Sur quelques plantes d'Algérie.'

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* Noticed on p. 220.

Bull. Torrey Bot. Club (Sept. 29). — H. Schrenk, '*Tubercularia pezizoidea*' (1 pl.). — F. L. Hanley, 'Lichens of Maine.' — J. W. Eckfelt, 'Lichens new to N. America.' — A. C. Stokes, 'Chromatophores of *Atrophyllum sylvaticum*, &c.'

Erythea (Oct. 1). — J. G. Lemmon, 'The Promontory Pines of Mendocino.'

Gardeners' Chronicle (Oct. 6). — 'Root-tubercles of Alder.'— (Oct. 13). *Physalis Francheti* Mast., sp. n. (fig. 57). — (Oct. 20). W. Brockbank, 'John Horsefield.'

Irish Naturalist (Oct.). — R. A. Phillips, 'Rare plants in West Cork.'—N. Colgan, '*Matricaria discoidea* in Ireland.'

Journal de Botanique (Aug. 1).—L. Guignard, 'Sur l'origine des sphères directrices' (concl.). — A. Franchet, 'Les *Cypripedium* de l'Asie' (concl.). — (Aug. 16). A. Franchet, 'Plantes nouvelles de la Chine occidentale.'

Journ. Linn. Soc. (Bot.: xxx, 209: Oct. 6). — C. T. Druery, 'Notes on Apospory' (1 plate). — J. C. Willis, 'Fertilization Methods of various flowers.'—'Cleistogamy in *Salvia Verbenaca*' (2 plates).—C. B. Clarke, 'Certain authentic *Cyperaceæ* of Linnæus.' —U. Martelli, 'Fall of Corolla in *Verbascum*.' — H. B. Guppy, 'Habits of *Lemna minor*, *L. gibba*, and *L. polyrhiza*.'

Naturalist (Oct.). — C. H. B. Woodd, 'Notes from Langstrothdale.'—L. Petty, 'Constituents of N. Lancashire Flora.'

Nuovo Giorn. Bot. Ital. (Oct. 1).—G. Del Guercio & E. Baroni, 'La gommosi bacillare delle Viti Malvasia in Italia.' — C. Massalongo, 'Miscellanea teratologica.' — A. Jatta, 'Licheni italiani.'— A. Bottini, 'Briologia italiana.' — F. Pasquale, 'Bibliografica botanica dell' Italia Meridionale.'—E. Gelmi, 'Le Primule italiane.'

Oesterr. Bot. Zeitschrift. (Oct.). — A. Nestler, 'Untersuchungen über Fasciationen' (1 pl.). — R. v. Wettstein, '*Euphrasia*' (cont.). —J. Panek, 'Weiden & Weidenbastarde.' — J. Haring, 'Abnorme Kätzchenbildungen bei *Salix*.'—H. Zukal, 'Zur Kenntniss der Cyanophyceen' (cont.). — J. Freyn, 'Plantæ novæ Orientales' (concl.).

BOOK-NOTES, NEWS, &c.

ANOTHER of the handsome volumes issued annually by the Missouri Botanical Garden has reached us. Modestly styled "annual reports," of which this is the fifth, these publications always contain papers of marked botanical value. Some of these are issued in advance of the volume, and Mr. Trelease in his preface thoughtfully gives the date of their actual publication: the fact that three of them "have been slightly corrected before the printing of the volume" may, however, cause some confusion. The principal contributions are, "A Study of the Venation of Species of *Salix*," by Dr. Glatfelter; "Material for a monograph on the Tannoids,"

by J. Christian Bay; "Phenological Notes" and "The emergence of *Pronuba* from the *Yucca* capsules," by J. C. Whitten; and two important systematic papers, fully illustrated, on "The Sugar Maples, with a winter synopsis of all North American Maples," and a "Revision of the North American Species of *Gayophytum* and *Boisduvalia*," by Mr. Trelease, who also contributes shorter notes and observations and the Annual Report of the Garden. As usual, the printing, paper and illustrations are most satisfactory.

We observe with satisfaction that the eloquence displayed at the Annual Banquet of the Trustees of the Garden is this year conspicuous by its absence. The "Annual Flower Sermon" by "Rt. Rev. Thomas U. Dudley, Bishop of Kentucky," is, however, given in full, and is as flowery as its title suggests. The injunction to "consider the lilies" is thus amplified by Bishop Dudley:— "The toiling artisan, the thousand-handed spinner of to-day, doth vainly endeavor to fashion the fabric whose velvet softness shall not be as haircloth by the side of the delicious touch of the lily's coat. The artist has not yet learned, after his centuries of endeavor, to mix the color which can bring the joy to the eye which flares from the rosetree, or soothes with its gentle radiance from the green sward." When Bishop Dudley has taken a summer holiday in Switzerland, he will modify his opinion of wild strawberries: "Come measure the giant strawberry nestling in its luxurious bed, luscious with sweetness and full to bursting of the sunshine, and then look on its poverty-stricken ancestor, sour and tasteless, bringing no satisfaction to the timorous hunger which is bold to consume it." "Come note," he says, "that the microscope discloses miracle of perfection in the curious fabric of the fern leaf, more wonderful perhaps than in that of the mammoth palm tree, though all here is miracle." There are fifteen pages of this, and Bishop Dudley got two hundred dollars for it!

It is announced that *Grevillea* will in future be issued at irregular intervals, each number containing thirty-two pages.

Mr. Elliot Stock sends us a "cheaper edition" (3s. 6d.) of *A Manual of Exotic Ferns and Selaginella*, by Mr. E. Sandford. It seems a useful handbook from a practical point of view, but it is to be regretted that the author did not obtain the help of a botanist in revising his proofs. We should then have been spared such references as "Brown, R., an English Botanist and Traveller, who travelled a great deal in New Holland, and visited some of the first Botanists of Europe": "Hooker, a family of distinguished Botanists, both past and present." Mr. Sandford cuts the Gordian knot of nomenclature in this fashion: "In this little work there is no pretence of the priority of any of the names, as that is open to such conflict among authorities; but the whole names, or synonyms, are to be found in different books under one or other of such names." John Smith's classification is followed, and there is an entire absence of reference to other works on ferns. The index is perverse in a new way: it contains a full list of species, but the only pages given are the first and last devoted to the genus—thus,

"Selaginella, 257, 266." We hope the proofs of any future edition will be more carefully read, and that the page on which each species is to be found will be added in the index.

In complying with the Rev. H. G. Jameson's request to announce that his *Guide to British Mosses* is out of print, we venture to add a hope that he will not allow this useful handbook to remain for any length of time inaccessible.

The *Bulletin of Miscellaneous Information* for September contains an account of the plants collected by Mr. William Lunt during Mr. Bent's expedition to the Hadramant Valley, Southern Arabia. Several new species and two new genera—*Strobopetalum* N. E. Br. (Asclepiadeæ Cynancheæ) and *Bentia* Rolfe (Acanthaceæ), the latter appropriately commemorating the leader of the expedition—are described. Mr. Lunt has since been appointed Assistant Superintendent of the Botanic Gardens, Trinidad. Mr. N. E. Brown also describes a new genus of Lythraceæ—*Galpinia*—from the Transvaal.

The Botanical Society of America has been "organized by the election of the following officers:—President, Wm. Trelease; Vice-President, N. L. Britton; Treasurer, John Donnell Smith; Secretary, Chas. R. Barnes. Only American botanists engaged in research, who have published works of recognised merit, shall be eligible to active membership." The Torrey *Bulletin* for September, from which we quote this information, affords other evidence of the reforming zeal of our transatlantic friends. A committee has been appointed "to prepare a statement for the convenience of publishers, that errors in the use of capitals in nomenclature might be avoided"; and "a standing committee on pronunciation" is to be formed, "Percey Miles' essay written for Nicholson's Gardener's Dictionary" (*i.e.*, Mr. Percy Myles's "pronouncing dictionary" issued as a Supplement to Mr. Nicholson's *Dictionary of Gardening*) having been suggested as a model.

We are always looking for some result of the work that is being carried on in the investigation of the Flora of Scotland, but the pretty and convenient little *Pocket Flora of Edinburgh*, by Mr. C. O. Sonntag (Williams & Norgate) does not materially add to our knowledge. It is a descriptive handbook with localities appended, but there is no attempt at anything like an exhaustive investigation of the plants of the Edinburgh district, nor anything to show that the author is critically acquainted with the plants he describes. Seeing that the "area gone over" is "from 30 to 40 miles in diameter," we fear that Mr. Sonntag is hardly justified in thinking that the little book "supplies a long-felt want." Such common garden trees as the laburnum and "acacia" are included; the snowdrop, from its habitat,—"woods and pastures, frequent,"—seems to be regarded as a native; all the specific names have capital initials: and an "English" name is supplied for each species—"Damort," however, although printed as one of these (for *Suæda maritima*), is a misprint for "Dumort.," the authority for the name. *Carum Bulbocastanum* is evidently a slip for *Conopodium denudatum*. The work, though well-intentioned, does not call for a

detailed notice: a Flora of Edinburgh worthy of the name is still a thing of the future.

The third part of the *Index Kewensis* appears just as we are going to press: it carries the enumeration down to the middle of *Psidium*. The printing of the concluding portion is proceeding rapidly, and the work will be completed about Midsummer, 1895.

OBITUARY.

The Rev. William Marsden Hind, whose death took place suddenly at Walsham-le-Willows, Suffolk, on September 13th, was a member of an old Yorkshire family. He was born in a little village near Belfast, in which neighbourhood his father had established a cotton mill, on Feb. 21st, 1815. He was educated at the Belfast Academy, and subsequently at Trinity College, Dublin, where he graduated in 1839. In the same year he was appointed to the curacy of Derriaghy, Co. Down, where he first began to study plants. Coming to England, he was curate at Pulverbach, 1845–8, and held other appointments until 1861, when he went to Pinner as perpetual curate, remaining there until 1875, in which year he was appointed rector of Honington, Bury St. Edmunds, a position he held until the end of his life.

His first botanical notes were published in the *Phytologist* for 1851, and included observations on *Lolium perenne* and *Anacharis*, and some localities of plants near Belfast: he also published notes in the new series of the same journal. He contributed largely to Mr. Melvill's *Flora of Harrow*, published in 1864, and in 1876 edited a second edition of that work. In 1870 he presented his large British herbarium to Trinity College, Dublin, in acknowledgment of which the University conferred on him the title of LL.D. He contributed to this Journal for 1871 notes on Middlesex plants and on a supposed occurrence of *Draba rupestris* (which proved to be *D. verna*) in Ireland, and in 1873 a list of North Cornwall plants: his only other communication was a short note on *Arabis albida* in 1890.

Although not a critical botanist, Dr. Hind was persevering and painstaking. His principal work was the *Flora of Suffolk*, published in 1889, and noticed in this Journal for 1890, p. 98: the experience of visitors has shown that this is an extremely accurate guide to the plants of the county. Dr. Hind presented to the Ipswich Museum the herbarium on which this work was based. He had made many additional notes to his Flora, and continued his interest in botany up to his death. On the morning of Sept. 13 he left home, apparently in good health, to take part in a clerical conference at Walsham-le-Willows, when he suddenly expired while addressing the meeting. Dr. Hind was buried at Stapenhill. He was twice married. We are indebted to one of his sons—Dr. Wheelton Hind, of Stoke-on-Trent, who wrote the outline of geology prefixed to the *Flora of Suffolk*—for much of the information contained in this notice.

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CONTRIBUTIONS TO SOUTH AFRICAN ASCLEPIADOLOGY.

By R. Schlechter.

(Continued from p. 263.)

DECAS II.

11. **Gomphocarpus macropus,** n. sp. Adscendens, pedalis et ultra; caule valido simplici vel parum ramoso densius foliato; foliis patentibus ovatis acutis vel acuminatis, brevissime pilosis, supra scabridis, subtus pallidioribus, 3–5 cm. longis, infra medium 2–3 cm. latis, petiolo brevi, 0·5–0·8 cm. longo; floribus in umbella terminali subglobosa multiflora, pedunculo validiusculo piloso, folia multo excedente, pedicellis pilosis, c. 2 cm. longis; calycis segmentis lanceolatis acutis, pilosis, 0·5 cm. longis; corollæ lobis reflexis ovatis obtusiusculis, extus apice pilosis, intus glabris, 0·9 cm. longis, medio 0·5 cm. latis; coronæ foliolis eis *G. crispi* R. Br. simillimis, e basi rhomboidea in laminam circuitu lanceolatam obtusiusculam dilatatis, margine medio utrinque dente brevi porrecto apice acuta in stigmatis marginem depresso præditis, gynostegium excedentibus, pro magnitudine corollæ tamen brevioribus; antheris basin versus valde dilatatis, appendice hyalino ovato obtuso apice in stigma inflexo, marginibus loculorum breviter excisis; polliniis compressis in caudiculas breves divaricatas apice dilatata glandula basi insertas, transeuntibus.

In graminosis prope Lynedock (Nataliæ), alt. 4000–5000 ped., 24 Febr. 1892, leg. *J. M. Wood*, No. 4544. In colle prope Mooi-Rivier (Nataliæ), alt. 4000–5000 ped., 31 Jan. 1894, leg. *J. M. Wood*, No. 5374.

In *G. macropus* we have before us a species which combines the habit of *G. albens* Dcne. with the aspect of the flowers of *G. crispus* R. Br. From the latter, however, it may easily be distinguished by the larger flowers, the anthers, and the pollen masses. As far as yet known to me, this species occurs only in the collections of Mr. Wood, who describes the colour of the flowers in No. 4544 as "yellow with white stripes." *G. macropus* has rather larger flowers than its allies.

12. **Schizoglossum atrorubens,** n. sp. Herba erecta 40–60 cm. alta; caule stricto tomentoso, satis dense foliato; foliis erectis linearibus acutis scabris, dense pilosis, subtus glabrescentibus pallidioribus, marginibus revolutis, basi in petiolum brevissimum angustatis, internodia excedentibus, 4–6 cm. longis, 0·2–0·6 cm. latis; floribus in umbellis extra-axillaribus alternantibus, erecto-patentibus 6–8-floris, folia æquantibus vel excedentibus, pedunculo pedicellisque 2–3-plo brevioribus (0·5–0·8 cm. longis), tomentoso-pilosis; calycis segmentis lanceolatis acutis dense pilosis, corolla duplo brevioribus; corollæ lobis erecto-patentibus ovatis obtusiusculis, marginibus reflexis, extus glabris, intus medio pilosis, 0·4 cm. longis, medio 0·2 cm. latis; coronæ foliolis erectis oblongis obtusis, gynostegium æquantibus, intus ligula paulo longiore lanceolata obtusiuscula, alte adnata, apice libera inflexa ornatis; antheris

oblongis marginibus cartilagineis basi vix ampliatis, appendice hyalino transverso obtusissimo, apice in stigma inflexo, marginibus loculorum rotundato-emarginatis; polliniis illis *S. umbellati* Schltr. simillimis, sed glandula minori.

In clivis montis Baziya (Kaffrariæ), alt. 4000 ped., flor. Febr.; leg. *R. Bauer*, No. 767.

Amongst the other Schizoglossums known to me this species may be recognised by its habit, the proportionately long-pedunculate flower-umbels, and the very distinct corona-scales, which in their shape seem to approach those of *S. parvulum* Schltr., a species otherwise very different, and belonging to quite a different section, on account of its distinct pollinia. The colour of the flowers (dark purple) is in the dried specimens, and most likely the same in the living flowers.

13. **Schizoglossum pachyglossum**, n. sp. Simplex, erectum, 25–40 cm. altum; caule basi subnuda deinde dense foliato, tomentoso; foliis patentibus vel erecto-patentibus lineari-lanceolatis breviter acuminatis, marginibus revolutis, basi subhastato-truncatis, brevissime petiolatis, 2–5 cm. longis; floribus in fasciculis vel sæpius cymis umbellatis breviter pedunculatis, extra-axillaribus alternantibus, ad apicem caulis, pedicellis filiformibus gracilibus, patentibus inæquilongis; calycis segmentis lanceolatis acutis pilosis, corolla subduplo brevioribus; corollæ lobis erecto-patentibus ovatis obtusis glabris, 0·3 cm. longis; coronæ foliolis carnosis erectis, e basi ovata apicem versus angustatis, rotundatis, vel conspicue bilobis, intus ligula æquilonga lineari obtusa vel breve biloba acutis; anthera subquadrata media paulo angustata, marginibus cartilagineis basin versus paulo ampliatis, appendice hyalino transverso obtusissimo, in stigma inflexo, marginibus loculorum rotundato emarginatis; pollinis ovoideis obtusis paulo compressis, caudiculis filiformibus divaricatis, brevibus, glandula oblonga apice obtusa basi truncata ima basi insertis.

In Natalia (loco incerto), *J. M. Wood*; *J. Thode*. In terra Orange Free State, in collibus prope Harrysmith, alt. 5–6000 ped., Dec. 1893, *J. M. Wood*, No. 5383. Bestero Vley, pr. Witzies Hoek, alt. 5600 ped., Dec. 1893, *H. G. Flanagan*, No. 1881; *H. Bolus*.

In its habit this species resembles more the *S. fasciculare* (E. Mey.) Schltr. than any other species, although in the structure of the flowers it is quite distinct. The stem is very leafy, and towards its summit densely covered with the small brownish or yellowish flowers, which are either arranged in fascicles or in shortly pedunculate umbellate cymes. The corona-scales are very fleshy, either entire at the apex or shortly bilobed; but such variations are not uncommon in *Schizoglossum*, as I have sometimes observed in the same plants flowers with entire corona-scales, and others with bifid ones. These differences, and the length of the midlobe and the ligula inside, seem, however, to be the only noteworthy variations; the shape and arrangement of the ligulæ on the inner surface seem to be always pretty constant.

14. **Schizoglossum parvulum**, n. sp. Tenellum, erectum, 15–20 cm. altum; caule flaccido, basi glabrato apicem versus velu-

tino, sparsim foliato; foliis erectis, linearibus vel lineari-filiformibus acutis, marginibus revolutis, supra pilosis, subtus glabris, subsessilibus, inferioribus internodiis multo brevioribus, superioribus subæquilongis vel longioribus, 1·5–3 cm. longis; cymis umbellatis extra-axillaribus alternantibus, paucifloris, pedunculo brevi velutino, pedicellis gracilibus filiformibus velutino-pilosis, pedunculi longitudine; calycis segmentis lanceolatis acutis pilosis, corolla subduplo brevioribus; corollæ lobis erecto-patentibus ovatis obtusiusculis, extus sparsim pilosis, intus glabris, 0·3 cm. longis, medio vix 0·2 cm. latis; coronæ foliolis erectis gynostegio æquilongis, ovato-lanceolatis obtusis, medio intus e basi ligula dorso foliolis alte adnata, lineari acuta, in stigma inflexa, donatis; antheris oblongis, marginibus cartilagineis angustis obtusis, basin versus haud ampliatis, loculorum longitudine, appendice hyalino brevi, transverso obtusissimo apice in stigma inflexo, polliniis angustis subfalcato-oblongis, caudiculis brevibus divaricatis, glandula angusta obtusa ima basi insertis.

In clivis montium prope Queenstown, alt. 4000 ped., flor. Nov. 1893, *E. E. Galpin*, No. 1600.

This tiny species is, I think, for the present best placed next to *S. filifolium* Schltr., with which it also agrees fairly well in habit. The corona-scales, however, distinguish both species very well. According to a note from Mr. E. E. Galpin, the flowers are "greenish brown," as they are also in *S. filifolium*." The distinctly pedunculate umbel also distinguishes this species.

15. **Schizoglossum pygmæum**, n. sp. E basi ramosum, ad 10 cm. altum; ramis adscendentibus gracilibus dense foliatis; foliis patentibus subsessilibus lineari-filiformibus acutis marginibus reflexis, pilosis, 2·5–4 cm. longis; cymis umbellatis extra-axillaribus alternantibus, plurifloris, pedunculo gracili foliis breviore vel subæquilongo velutino-piloso, pedicellis villosis filiformibus inæquilongis; calycis segmentis lanceolatis acutis pilosis, c. 0·1 cm. longis; corolla subrotata vix 0·5 cm. diametro, lobis ovatis obtusiusculis glabris, 0·2 cm. longis, vix 0·1 cm. latis; coronæ foliolis e basi ovata apice trilobis, lobulis lateralibus brevibus oblique ovatis acutiusculis, intermedio duplo longiore lineari vel lineari-lanceolato acuto apice inflexo, intus medio lamellis 2 parallelis longitudinaliter donatis; antheris oblongis, marginibus cartilagineis basin versus paulo dilatatis rotundatis, loculorum longitudine, appendice hyalino brevi oblongo rotundato, apice in stigma inflexo, marginibus loculorum rotundato-emarginatis; polliniis basi oblique pyriformibus apicem versus angustatis in caudiculam abeuntibus; caudiculis brevibus, glandula anguste oblonga apicem versus angustata ima basi insertis.

In graminosis lapidosis prope Somerset East, alt. 2500 ped., fl. Nov., *P. MacOwan*, Nos. 906, 1654. In Kaffraria, *Mrs. Barber*. In graminosis pr. King-Williamstown, alt. 1200 ped., flor. Nov. 1893, *H. G. Flanagan*, No. 2171.

A remarkable little plant, quite unlike any other species in habit, but doubtless congeneric. In structural characters it is nearly allied to *S. Aschersonianum* Schltr. and *S. tomentosum* Schltr., with

both of which it agrees in the distinctly 3-lobed corona-scales. The colour of the flowers is olive-green or brownish, with lighter margins; the corona-scales are pure white.

16. **Schizoglossum striatum**, n. sp. Erectum, simplex, c. 30 cm. altum; caule basi velutino, apicem versus dense villoso laxe foliato; foliis erectis sessilibus lineari-lanceolatis linearibusve acutis, pilosulis, basi subauriculatis, marginibus revolutis, 2–3 cm. longis, basi ad 0·5 cm. latis, inferioribus internodia subæquantibus, superioribus superantibus; floribus in genere mediocribus in fasciculis extra-axillaribus plurifloris, pedicellis filiformibus densius pilosis, inæquilongis, calycis segmentis lanceolatis acutis, pilosis, 0·3 cm. longis; corolla subrotata 1·2 cm. diametro, lobis ovato-lanceolatis obtusis, striatis, extus sparsim pilosis, intus glabris, marginibus revolutis, 0·5 cm. longis; coronæ foliolis e basi subquadrata apice trilobis, lobulis erectis, lateralibus subfalcato-oblongis obtusiusculis, brevibus, intermedio lineari, 3–4-plo longiore, apice acuto incurvo, intus medio ligulis 2 erectis, apice inæqualiter bidentatis, folioli lobos laterales paulo superantibus, præditis; antheris ovalibus, marginibus cartilagineis basi vix ampliatis, obtusis, loculos paulo superantibus, appendice hyalino minuto, subrotundato obtusissimo, in stigma inflexo, marginibus loculorum breviter excisis; polliniis oblongo-falcatis obtusis, caudiculis filiformibus divaricatis, brevibus, glandula ima basi insertis, glandula pro magnitudine polliniorum maxima, rhomboidea, subacuta.

Natal, *Mrs. Saunders*.

A most distinct plant, of which I have only seen one specimen. It is best distinguished by the two inner ligulæ of the corona-scales, which differ in their shape from anything of the kind among the South African Asclepiads. It might almost be said that they resemble the petals of the orchid genus *Schizodium*. The gland is very large in proportion to the shortly oblong-falcate pollinia, and of a rhomboid form.

17. **Schizoglossum umbellatum**, n. sp. Gracile, erectum, 25–30 cm. altum; caule stricto velutino, basi glabrato apicem versus velutino, dense foliato; foliis erectis anguste linearibus acutis brevissime pilosulis, marginibus revolutis, basi in petiolum brevissimum angustatis, internodia superantibus, 2·5–5 cm. longis; floribus in umbellis extra-axillaribus alternantibus plurifloris, folia haud æquantibus vel rarius paulo excedentibus, pedunculo 3–3·5 cm. longo, pedicellisque vix 1 cm. longis tomentosis; calycis segmentis lanceolatis acutis dense pilosis, corolla duplo brevioribus; corollæ lobis erecto-patentibus ovatis obtusis, extus glabrescentibus intus pilosis, 0-3 cm. longis, medio vix 0·2 cm. latis; coronæ foliolis e basi ovata supra medium paulo angustatis apice bilobis, gynostegii fere longitudine, intus ligula alte adnata æquali, paulo angustiore apice breve excisa præditis; antheris oblongis marginibus cartilagineis subfalcatis obtusis, appendice hyalino amplo obtusissimo, apice in stigma inflexo, marginibus loculorum breviter excisis; polliniis anguste subfalcato-lanceolatis utrinque obtusis, caudiculorum insertione in partes 2 subæquilongas divisis, superiore

angustiore magis compressa, caudiculis brevibus filiformibus divaricatis, glandula oblonga obtusa basi affixis.

Kaffraria, *Mrs. Barber*.

For some time I was in doubt whether to regard this species as a variety of *S. bidens* E. Mey. or as a distinct species. Although the habit of our plant is much more slender than in *S. bidens* E. Mey., there is but little to separate them. I think it best, however, to keep them distinct, as the differently shaped corona-scales and the smaller flowers, accompanied by the habit, seem to justify their separation.

18. **Pentarrhinum coriaceum,** n. sp. Volubilis, alte scandens, ramis subteretibus lignescentibus, apicem versus tenuiter velutinis, satis dense foliatis; foliis coriaceis ovato-cordatis acutis acuminatisve, glabrescentibus, marginibus subrevolutis, more *Astephani marginato* Dcne., 3–7 cm. longis, infra medium 2–5 cm. latis, petiolo brevi velutino; floribus quam in *P. insipido* E. Mey. minoribus, in cymis subextra-axillaribus plurifloris, folia haud excedentibus, pedunculo pedicellisque inæquilongis sparsim pilosis; calycis segmentis lanceolatis acutis puberulis; corolla duplo brevioribus, vix 0·2 cm. longis; corollæ lobis patentibus ovatis obtusis, 0·4 cm. longis, medio 0·2 cm. latis; coronæ foliolis circuitu subquadratis, apice emarginatis, intus apice medio ligula vel lamina basi in carinam transeunti, apice libera obtusa dilatata inflexa, ornatis; antheris brevibus marginibus cartilagineis satis amplis basi dilatata obtusatis, loculos excedentibus, appendice hyalino magno suborbiculari vel oblongo obtusissimo, apice in stigma inflexo, marginibus loculorum profunde excisis; polliniis ovoideis, caudiculis divaricatis brevibus glandula angusta obtusiuscula basi affixis.

In Nataliæ loco incerto; leg. *Gerrard et McKen*.

This is well distinguished from our only South African species, *P. insipidum* E. Mey., the type of the genus, by its coriaceous leaves, smaller flowers, and the corona-scales. These are not, as in *P. insipidum*, very concave and fleshy, with a spur-like ligula (as in *Asclepias*) coming out from the top, but much more flattened out, of a thinner texture, with a flattened obtuse appendage just below the top of the inner side. Towards the bottom of the corona-scales this appendage is produced in the form of a mere carina, which at last disappears totally before reaching the bottom. The anthers are also much shorter than in the other species; the pollinia also distinct. This species is only known to me from a small scrap collected by Gerrard & McKen in Natal.

There is a plant in cultivation in the Botanic Gardens at Durban (Natal), which has been received from Kew, said to be of South African origin, which may be an allied species to our plant, but with much larger flowers; however, as its habitat in South Africa seems to me at least very doubtful, I have refrained for the present from describing it.

19. **Sisyranthus schizoglossoides,** n. sp. Herba gracilis, erecta, habitu omnino Schizoglossi; radicibus subfusiformibus fasciculatis; caule tenuiter simplici vel parum ramoso, glaberrimo,

satis dense foliato, 10–15 cm. alto; foliis erectis linearibus acutissimis vel acutis, basi in petiolum brevissimum angustatis, internodia excedentibus, 1–2·5 cm. longis; floribus in genere minimis in fasciculis extra-axillaribus alternantibus 1–3-floris, pedicellis erecto-patentibus filiformibus glabris, foliis multo brevioribus; calycis segmentis lineari-lanceolatis acutis glabris, corolla duplo brevioribus; corollæ tubo brevissimo, lobis erecto-patentibus ovato-triangulis acutis glabris, 0·2 cm. longis, faucibus glabris; coronæ foliolis oblongis, apice obtusissimis, emarginato-excisis, extus dimidio superiore dense pilis niveis barbatis.

In apertis, Round Hill, in terra "Lower Albany" dicta, alt. 1000 ped., flor. Dec. 1885, leg. *H. Bolus*, No. 6694. Prope Grahamstown, anno 1893, *Glass*.

The material which was at hand when I determined this interesting little plant was but scarce, so that in several respects I am not quite sure about its structure. Although there are many points in which this agrees with the generic character of *Sisyranthus*, there are others which may perhaps justify its being regarded as a new genus. However, I think it best to place it for the present under *Sisyranthus*, hoping soon to be able to get better living flowers or material in alcohol to settle this question.

S. schizoglossoides seems to be a rare plant, and confined to a small area. On account of its small greenish flowers, it may easily be overlooked by collectors.

20. **Ceropegia caffrorum,** n. sp. Volubilis, glaberrima; ramis elongatis teretibus distanter foliatis; foliis patentibus vel patulis, anguste ovalibus vel lanceolatis, acutis vel acuminatis, carnosulis, 1–2 cm. longis, supra basin 0·3–0·5 cm. latis, petiolo 0·2–0·4 cm. longo; floribus in cymis extra-axillaribus alternantibus pauciflоris, pedunculo patente quam folia breviore, pedicellis erectis brevibus; calycis segmentis linearibus acutissimis, glabris, patentibus, 0·2 cm. longis; corolla urceolari e basi subglobosa (0·4 cm. diametro) in tubum rectum subcylindricum, faucibus vix ampliatum, 1 cm. longum, angustata, lobis e basi triangulari lineari-attenuatis, apicem versus dilatatis incrassatis, acuminatis, 0·5 cm. longis; coronæ carnosulæ foliolis exterioribus 5 in tubum brevem connatis, lobulis liberis erectis, 5 semiorbicularibus, brevibus interioribus erectis e basi angustata lineari-lanceolatis obtusiusculis, exteriora multo excedentibus; antheris polliniisque generis.

Inter frutices scandens, Berea prope Durban (Nataliæ), alt. c. 150 ped., 20 Febr. 1894, leg. *J. M. Wood*, No. 5376.

I am indebted for fine specimens of this pretty species to my friend Mr. J. M. Wood, of the Botanic Gardens at Durban (Natal). The nearest ally is *C. Woodii* Schltr., which is distinct by the shape of the corolla and the corona. According to Mr. Wood, the colour of the flowers is dark red-brown, but in my dried specimens the tube seems to be of a lighter colour towards the base.

ADDITIONAL STATIONS FOR IRISH RUBI.

By R. Lloyd Praeger, B.A., M.R.I.A.

The following notes are in continuation of those which appeared in this Journal, pp. 75–77. By the kindness of Rev. W. M. Rogers, a number of my Irish plants have been submitted to Dr. Focke, and Mr. Rogers has favoured me also with his own more mature opinion on others about which there was at first some doubt. Of those which are now recorded, *R. micans* and *R. saxicolus* do not appear to have been noticed in Ireland hitherto, and most of the other notes form new district records.

R. rhamnifolius W. & N., × *rusticanus* Merc. Foxrock, Co. Dublin. "Probably," W. O. F. and W. M. R.

R. macrophyllus W. & N., var. *R. Schlechtendalii* (Weihe). Foxrock, Co. Dublin. Altadore, Co. Wicklow: "a poor form," W. O. F.

R. micans Gren. & Godr. Howth, Co. Dublin, *teste* W. O. F. and W. M. R. First Irish record.

R. pyramidalis Kalt. Balbriggan, Co. Dublin, and Lough Dan, Co. Wicklow.

R. fuscus W. & N. Balbriggan, Co. Dublin (aggregate); a second station, about a mile from that previously noted, which was its first known station in Ireland.

R. Koehleri W. & N. Kelly's Glen, Co. Dublin. "A very prickly form, near var. *hirsutus*, but sufficiently distinct from it, and making some approach to strong forms of *R. hystrix*," W. M. R.

R. saxicolus P. J. Muell. West side of Three Rock Mountain, Co. Dublin: "I believe it is near *R. saxicolus*, but a quite glabrous variety," W. O. F.; "I agree," W. M. R. Raheny, Co. Dublin: "Form of *R. saxicolus*," W. O. F. Foxrock, Co. Dublin: "A form of *R. saxicolus*, I suppose," W. O. F. Lough Dan, Co. Wicklow: "Apparently between *R. saxicolus* P. J. M. and *R. hirtus* W. & K.," W. M. R.; "*R. saxicolus*, I think, an unusually hairy variety," W. O. F. Not hitherto recorded from Ireland.

R. dumetorum W. & N., var. *R. diversifolius* (Lindl.). Clontarf, Co. Dublin: "Not quite Lindley's plant, I think, but nearer to it than to any other of our forms," W. M. R.

R. dumetorum W. & N., var. *R. scabrosus* (P. J. Muell.). Near Portarlington, in Queen's County.

R. corylifolius Sm. Portarlington, King's Co.: "With exceptionally strong panicle-prickles," W. M. R.

R. corylifolius Sm., × *leucostachys* Schleich. Maryborough, Queen's Co.: "Almost certainly," W. M. R.

R. Balfourianus Blox. Portarlington, in Queen's County.

R. cæsius L., × *corylifolius* Sm. Howth Junction, Co. Dublin: "Almost certainly," W. M. R.

A number of other plants still remain doubtfully named, amongst which are several supposed hybrids and a number of *Corylifolii glandulosi*. Among the names *suggested* for Co. Dublin plants are *R. Wahlbergii* and *R. Menkei*, two forms that are not, so far, known in Britain.

NOTES ON GUTTIFERÆ.

By Edmund G. Baker, F.L.S.

The following are a few notes made during a revision of the collection of *Guttiferæ* in the British Museum Herbarium, in accordance with M. Vesque's recently published Monograph. As pointed out by Mr. C. B. Clarke in his review of the Monograph (Journ. Bot. 1890, 116–120), *Guttiferæ*, as understood by M. Vesque, excludes the aberrant tribe *Quiineæ*, and also of course Aublet's genus *Touroulia*,* which Bentham and Hooker have referred to *Quiina*. M. Vesque considers that this tribe ought to be kept up as a small distinct family. It is to be regretted that the learned author did not visit this country and go through the material which we fortunately possess, and which would certainly have been in many cases helpful to him. As forming by no means the least interesting portion of the collections, I may mention that a few years ago the Trustees of the British Museum purchased Triana's Herbarium, in which are to be found the types of many of the species described by Planchon and Triana in their well-known work.

Any one using the Monograph cannot fail to recognise the very careful manner in which M. Vesque has drawn up his descriptions from the material which he had at his command. The value, however, of minute anatomical characters drawn from the internal structure of the leaf seems to me very subordinate for practical purposes to those more readily visible drawn from the structure, character, or arrangement of the flowers, leaves, or stems. Characters drawn from internal leaf-structure seem liable to more variability than those drawn from flowers.

M. Vesque's meaning is occasionally rather difficult to follow. For instance, on p. 123, *Triplandron lineatum* is described by Bentham (Bot. Sulphur, p. 73), and on this Triana and Planchon founded their *Clusia lineata;* but M. Vesque quotes *Clusia lineata* as of Bentham, *l. c.*, doubtfully referring to it Bentham's *Triplandron lineatum*. *Clusia Seemanni* Pl. et Tr., which is synonymous with *Triplandron lineatum* Seemann (Bot. Herald, p. 80), is a different plant. M. Vesque almost entirely overlooks any work that has been done in the *Guttiferæ* in this country during the past ten years. I may illustrate what I mean by taking the genus *Symphonia*. In the Monograph six species are enumerated, five of which are confined to Madagascar; but more than double this number have been already described from this island. The following is a list of the Mascarene Symphonias, in which I have ventured to incorporate two novelties:—

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* Prof. Oliver (Ic. Pl. t. 1998) figures a second species of *Touroulia*, expressing at the same time the opinion that this genus is quite distinct from *Quiina*.

Mascarene Species of Symphonia.

* Folia lanceolata vel oblongo-lanceolata.

α. Folia apice acuta vel acuminata.

1. S. verrucosa Benth. et Hook. f.; Vesque, Monograph, p. 231. *Chrysopia verrucosa* Hils. et Boj. Ann. Sc. Nat. Ser. iv. xiv. 290.

Hab. Madagascar, in sylvis vastis prope Be-fouroun, *Hils. & Bojer*. Herb. Mus. Brit.! Herb. Paris.

β. Folia apice longe vel longissime attenuata.

2. S. pauciflora Baker in Journ. Linn. Soc. xx. 90.

Hab. Central Madagascar, *Baron*, 1526 A. Herb. Mus. Brit.! Herb. Kew!

3. S. urophylla Benth. et Hook. f.; Vesque, Epharm. iii. t. cviii.; Monograph, 231. *Chrysopia urophylla* Dcne. Ann. Sc. Nat. Ser. iv. xiv. 291.

Hab. Madagascar, *Goudot* in Herb. Delessert. Herb. Mus. Brit.!

Nom. vernac. "Azine Valave."

Near *S. globulifera*.

** Folia oblonga apice acuta.

4. S. eugenioides Baker in Journ. Linn. Soc. xx. 91.

Hab. Wood near Tankay and the east coast, *Baron*, 1638 A! Herb. Kew!

Allied to *pauciflora*, but with broader leaves.

*** Folia oblanceolata apice acuta vel acuminata.

5. **S. oligantha, n. sp.** Arbor alta, foliis oblanceolatis acutis vel subacuminatis petiolatis nervis lateralibus parallelibus, floribus ad apices ramulorum subumbellatim dispositis, cymis 2–4-floris floribus quam flores *S. floribundæ* multo majoribus, sepalis 5 ovatis versus apicem sæpe ciliatis, petalis orbicularibus, staminibus inferne in tubum connatis, antheris pro singula adelphia 4–5 linearibus bilocularibus parallelibus subrectis disco infrastamineo cupuliformi, stylo crasso ad apicem in stigmata 5 diviso, stigmatibus stellatim divergentibus, ovario ampullæformi 5-loculari.

Hab. North Madagascar, *Baron*, No. 6469 (1892)! Herb. Kew.

A large tree from which a yellow gum exudes; the tree being known to the natives under the name of "*Vazony*." Leaves oblanceolate, acute, petioled, $3\frac{1}{4}$–4 in. in length, a little over 1 in. broad in the broadest part; petiole about $\frac{3}{4}$ in. long; apex acute or subacuminate; lateral veins parallel. Cymes of flowers arranged in a subumbellate manner at the ends of the branches. Buds about $\frac{1}{2}$ in. in diameter. Cymes 2–4-flowered. Peduncle $\frac{3}{4}$–1 in. long. Sepals ovate. Petals subelliptical. Stamens connected below, and with a cupuliform ring. Anthers bilocular, parallel, 4–5 in each bundle, the connection being produced. Stigmas 5, stellately radiate. Ovary 5-celled.

This plant is allied to *S. acuminata;* the leaves, however, are a different shape. The cymes are 2–4-flowered.

**** Folia obovato-oblonga acuminata.

6. S. ACUMINATA Baker in Journ. Linn. Soc. xxi. 322.

Hab. Madagascar, *Baron*, Nos. 2890! 2921! Between Tamatave and capital, *Baron*, 6003 (1891)! Ft. Dauphin, *Scott Elliot*, 2641! Herb. Kew.

Allied to *S. urophylla* and *S. globulifera*.

***** Folia obovata vel oblanceolata apice obtusa rarissime subacuta.

+ Folia parva, $\frac{1}{2}$–$\frac{2}{3}$ poll. longa.

7. S. MICROPHYLLA Benth. et Hook. f.; Vesque, Epharm. iii. t. cviii.; Monograph, 234. *Chrysopia microphylla* Cambess. Mem. Terns. et Guttif. 55, t. iv.

Hab. Prov. Imerina, *Hils. et Boj.* Deless. in Herb. Cambess. Herb. Delile. Central Madagascar, *Baron*, Nos. 378! 1021 (1881)! Herb. Mus. Brit.! Herb. Kew!

8. S. LEPIDOCARPA Baker in Journ. Linn. Soc. xx. 91.

Hab. Prov. Imerina, *Baron*, No. 317. Herb. Kew!

Near preceding species.

++ Folia majora, $\frac{3}{4}$–$1\frac{1}{2}$ poll. longa.

9. S. CLUSIOIDES Baker in Journ. Bot. 1882, 19.

Hab. Central Madagascar, *Baron*, 506! 1943! Betsileo Country, *Baron*, No. 16 (1880)! Herb. Mus. Brit. Herb. Kew.

This plant is fairly common, and liable to considerable variation. *Baron*, Nos. 3205 (1883), 3819 (1885), from Central Madagascar, are a form with subacute leaves.

10. **S. Hildebrandtii**, n. sp. Arbuscula, cortice griseo-cinereo, foliis rigide coriaceis obovatis vel elliptico-obovatis rarius oblanceolatis utrinque glabris breviter petiolatis apice obtusis vel subacutis, alabastris globosis, floribus solitariis vel subsolitariis "purpureis" longe pedunculatis, pedunculis sæpe contortis, staminibus 15 inferne in tubum connatis, antheris pro adelphia singula 3 linearibus rectis bilocularibus parallelis, disco infrastamineo cupuliformi, stylo crasso ad apicem in stigmata 5 diviso, stigmatibus stellatim divergentibus, ovario 5-loculari ampullæformi.

Hab. Central Madagascar, Betsileo Country, *J. M. Hildebrandt*, No. 3896! Herb. Mus. Brit. Herb. Kew.

A small tree ("3 *m.* alt.") with furrowed, grey, cinereous bark. Leaves rigidly coriaceous, obovate, elliptical obovate, or more rarely oblanceolate, smooth on both surfaces; lamina rather over 1 in. long and 5–7 lines broad; petiole $1\frac{1}{2}$–2 lines long; the lateral veins not at all prominent below; apex obtuse or subacute. Flowers solitary or subsolitary. Peduncles often twisted, $\frac{3}{4}$–1 in. long, rather stout. Sepals suborbicular, coriaceous, about 2 lines long. Stamens monadelphous, connected for a length of about 4 lines. Anthers in 5 bundles of 3 each, the connective protruding beyond the cells. Pistil about $\frac{1}{2}$ in. long. Stigmas 5, divaricately radiate. Ovary ampullæform, 5-celled.

The leaves of this plant are rigidly coriaceous, obovate or elliptical obovate, rarely oblanceolate, with a blunt or subacute

apex. The flowers are borne on peduncles ¾–1 in. long, and are either solitary or subsolitary.

+ + Folia majora, 2–3 poll. longa.

⊙ Flores magni.

11. S. FASCICULATA Benth. et Hook. f.; Baill. Hist. de Plantes, vi. 399; Vesque, Epharm. iii. t. cviii.–cix.; Mon. 232. *Chrysopia fasciculata* Noronha ex Du Petit Thouars, Gen. Mad. No. 48; Hist. des Végétaux, t. 24.

Hab. Madagascar, *Noronha*. *Poivre*. *Du Petit Thouars*. *Chapelier*! *Boivin*. *Humblot*. Herb. Mus. Brit.!

M. Vesque classes this plant under the heading, "Folia apice rotundata." The leaves in the figure of *Chrysopia fasciculata* are certainly subacute or almost acute.

12. S. MELLERI Baker in Journ. Linn. Soc. xx. 90.

Hab. Between Tamatave and Antananarivo, in marsh land by a river, *Dr. Meller*! Herb. Kew.

⊙ ⊙ Flores parvi.

13. S. GYMNOCLADA Benth. et Hook. f.; Vesque, Mon. 232. *Chrysopia gymnoclada* Planch. et Triana. *l. c.* 291.

Hab. Madagascar, *Goudot* in Herb. Delessert. Herb. Mus. Brit.!

In connection with the Mascarene *Guttiferæ* it may be remarked that slightly different copies exist in botanical libraries of Du Petit Thouars' *Histoire des Végétaux recueillis dans les isles australes d'Afrique* (1806), with 24 plates. It contains a good figure of *Chrysopia fasciculata*, which M. Vesque does not seem to have seen. In the Kew copy, which bears the date 1805, there are six additional plates without text, t. 26 being a figure of *Ochrocarpus*, and t. 27 *Brindonia oxycarpa*. This latter plant seems to have escaped subsequent notice, and finds no place in the *Index Kewensis*.

Under *Garcinia* the following Mascarene species are omitted from the index of M. Vesque's Monograph, nor have I found them in the body of the work:—*G. pauciflora* Baker in Journ. Linn. Soc. xx. 92. *G. Melleri* Baker, *l. c.* *G. cernua* Baker, *l. c.* xxii. 446. *G. orthoclada* Baker, *l. c.* *G. cauliflora* Baker, *l. c.* *G. polyphlebia* Baker, *l. c.* 447. *G. pachyphylla* Baker, *l. c.* xxv. 295. *G. aphanophlebia* Baker, *l. c.* xxv. 295.

M. Vesque gives Western Tropical Africa, Madagascar, and Tropical Asia as the geographical range of *Garcinia*. Harvey, however (Gen. S. Afr. Pl. ed. ii. 26 (1861)), published *G. Gerrardi* from Natal, and my father has described *G. Buchanani* (in Kew Bulletin, 1894, 354) from Nyasaland, so that the range must be extended.

G. Mestoni F. M. Bailey (Bot. Bellenden-Ker Expedition, 31 (1889)), gathered on the Bellenden Ker Range, Australia, at an altitude of 2000 ft., does not appear in the Monograph.

In the genus *Ochrocarpus*, which Noronha (fide Du Petit Thouars, Gen. Nov. Madagascarienses, 15) spelt *Ochrocarpos*, M. Vesque transfers *O. decipiens* H. Baill. to *Garcinia*. He omits, however,

O. macrophyllus O. Hoffm. (Sert. Pl. Mad. 7 (1881)), founded on Hildebrandt's No. 3239, from Nossi-Komba; *O. multiflorus* O. Hoffm. *l. c.* (Nossi-Komba, *Hildebrandt*, No. 3337); and *O. parvifolius* Scott Elliot (Journ. Linn. Soc. xxix. 5 (1891)), gathered in woods near Fort Dauphin, Madagascar. *O. multiflorus* O. Hoffm. is presumably the same as *Garcinia disepala* Vesque, as they are both founded on the same number of Hildebrandt. *O. macrophyllus* O. Hoffm. ought to be compared with my father's *G. pachyphylla*. I have had no opportunity of doing this, but there is considerable similarity between them.

I find no mention of *Sphærosepalum*, a curious and interesting genus having affinities possibly with certain *Ternstroemaceæ*, perhaps on this account excluded from the Monograph. The species originally described is *S. alternifolium*, gathered by Baron in Madagascar, No. 2412 (Journ. Linn. Soc. xxi. 321 (1884)). Mr. Scott Elliot (Journ. Linn. Soc. xxix. 5 (1891)) describes and figures a second species, *S. coriaceum*, from woods near Fort Dauphin, Madagascar.

M. Baillon's genus *Leioclusia* (Bull. Soc. Linn. Par. 1880, 244) is not included. The solitary species *L. Boiviniana* was collected by M. Boivin at Sainte Marie, in Madagascar, in 1851. M. Vesque may possibly exclude it from *Guttiferæ*.

I have thought it worth while to place these notes on record, as there is a danger that species omitted from so comprehensive a Monograph may be re-described as new by some future student of the order.

NOTES ON BRITISH PLANTS.

By Arthur Bennett, F.L.S.

Introductory.

It is manifestly impossible to discuss in our Floras questions relating to distribution, variation, nomenclature, &c. In looking through and collating various Floras, and various editions, we find a constant name-changing going on. In this collating, I have been struck with the want of correspondence between our Floras and continental ones, each differing in some points from Nyman's *Conspectus*; as well as by the uncertainty of priority, of relation to the Linnean names, the utter want of any system of varietal naming, &c. In these notes, I hope to put before British botanists the difficulties attending some of these matters; and by contrasting various opinions, I may perhaps help to show the way to a better appreciation of the works of our various authors.

Many British botanists confine themselves to one text-book; this is in many respects a safe and even a good plan, but it limits the area of work and observation. It is, I think, better to see as many Floras as possible, noting the differences in the mode of describing the plants; plants must of course be described and contrasted; but it often happens that a single character will at once

separate two closely allied species, and this, one which will not be found in the text-books. In some species this can sometimes be done by the seed-leaves alone, while others are extremely difficult to separate, even when full grown, before flowering.

Plants in relation to insects offer a wide field of observation. I have found that bees are good botanists. They could distinguish a very closely allied hybrid *Verbascum* (raised from *V. Thapsus* × *pulverulentum*). I was much puzzled with five specimens of seedlings of this; in the first winter they were so alike that I could not be sure which was which; as they came into flower I found the bees left two plants entirely to themselves (these were *pulverulentum*). I tied muslin over the three others, but still the bees refused to touch the two named; but, immediately a slit was made in the muslin, found their way in to the others. These were hybrids. Why this was I am unable to say. The next winter I found the only way I could separate these two plants was that the leaves of the hybrids had a much greater quantity of hoar-frost than the others (*pulverulentum*); they were beautiful objects when the sun was on them, as they then became beaded all over with the drops of water.

The field still to be explored among British plants (outside what I may call laboratory botany) is extensive. Geographical distribution—a second edition of Watson's *Compendium* would here be extremely useful—especially in the British Isles themselves (here a third edition of *Topographical Botany* is required); the disappearance of plants, whether by natural or artificial means; careful enumeration of plants of newly broken ground; the results of drainage and enclosures; peat deposits, with reference to present and past floras; influence of soils on plants, whether the result of mechanical, chemical, or lithological characters; action of frost on roots in soils of a retentive or porous nature; and careful examination of our lakes, rivers, and ponds.

I.—STATICE.

This is a small genus in Britain, but the names its species ought to bear are by no means settled.

STATICE RARIFLORA Drejer, *Fl. Excurs. Hafn.* p. 121, 1838. Drejer here clearly defines this plant, but, previous to this, Fries, *Mant.* i. p. 10 (1832), under *S. Limonium*, mentions that the plant of Scania and Bahusia differs, and defines these differences without actually naming the plants. In his second *Mant.* p. 17 (1839), he calls them, "1, *Scanica;* 2, *Bahusiensis*," with several wrongly applied synonyms. In the *Bot. Notiser* for 1844, p. 11, he defines the plant as *S. Bahusiensis*. In his *Summ. Veg. Scand.* p. 200 (1846), he refers for the name to the 1844 publication, thus tacitly ignoring the previous reference. He here divides the species into *borealis* = *Bahusiensis* and *Danica* = *S. rariflora* Drejer. Notwithstanding this citation of the 1844 name, he says that he considers it ought to bear his name, as, in addition to the *Mant.* 1832 notes, specimens were issued by him in the Herbarium Normale, fasc. 3, No. 18 (1837), a year before Drejer's description appeared. If this publication is

considered sufficient, Fries's name would stand; but I do not think it can.

The first notice of this as a British plant was in a note by Mr. Notcutt in the *Phytologist* for Dec. 1842 (i. 429), under the name *S. tatarica* L., a name suggested by Dr. Lindley, and withdrawn on p. 492. In May, 1843 (*l. c.* 561–63), Mr. Henfrey defines it as the *S. rariflora* of Drejer, with a figure. The specimens came from Fareham, Hants. In June of the same year Prof. Babington (*l. c.* 594) gives some notes on it, and while considering the Scottish specimens to be the plant of Drejer, expresses some doubt as to the Fareham plant.

Do our specimens fit in with Fries's description of his two varieties? Here I think the answer must be "Yes" and "No." To me, the nearest approach to his *borealis* is found in specimens from Lancashire and Cheshire; to his *danica* in some of the Scotch examples: but every gradation between these can be found on British specimens. A difference in height, branching of the spikes, curving or not of the apices, &c., will at times be produced by local and climatal causes, or brought about by a dry or rainy season. Irish specimens (Mr. H. C. Hart) seem to clearly represent *danica*, but I have not seen such extreme *borealis* from Ireland as those from Fleetwood, Lancashire, gathered by Dr. Fraser.

Other notices of this plant will be found in *Phytol.* i. 812, by Mr. Notcutt; in *Ann. Nat. Hist.* June, 1849, p. 439, by Prof. Babington.

S. Limonium L. *Sp. Pl.* ed. 1, vol. i. p. 274 (1753). Dr. Boswell, in *English Botany*, makes *S. Behen* Drejer and *S. Bahusiensis* Fr. subspecies under *S. Limonium*, and says the Linnean herb. specimen is *S. Bahusiensis* Fr. In Nyman and elsewhere, *S. Behen* and *S. Limonium* L. (Reichb.) are made separate species, with *S. rariflora* Drejer as a third. Following Nyman, *S. Limonium* L. (Reichb.) is a British plant, but not a Scandinavian species, where its place is taken by *S. Behen* Drejer, which many Scandinavian authors quote as *S. scanica* Fr.; while *S. Behen* Drejer is not a British plant (*fide* Nyman), although Drejer, *l. c.*, cites *S. Limonium, Eng. Bot.* 102; this is the plate Syme gives as *S. Behen* v. *genuina*.

Lange (*Handb. Dansk. Fl.* 1888) simply gives the two as synonyms. If Lange and Neuman (*Bot. Notiser*, 1883, p. 52) are right, then it seems that this case comes under Mr. H. C. Watson's remarks as to collective species.

If we write *S. Limonium* L., we mean both *Behen* and *rariflora*, or either, as the case may be; hence, unless used in the sense it is by Syme, it becomes misleading. But if we write *S. Behen* or *S. rariflora* Drejer, we define what we mean (always supposing that *Limonium* and *Behen* are not separable). Lange (*Nomencl. Fl. Danicæ*, p. 126) follows the views of Fries, and includes under *Limonium* L., *S. Bahusiensis* Fr., *borealis* Fr. (*S. rariflora* Drej.), v. *danica* Fr., and *S. scanica* Fr. (*Behen* Drej.).

Notwithstanding all this, Sir J. D. Hooker (*Stud. Flora*) writes, "*S. Limonium* proper, var. *Behen* Drej."; and "subsp. *S. rariflora*

Drej."; yet Syme says if anything is *S. Limonium* L. proper (*fide* Linn. herb.), *rariflora* is. Linnæus quotes "Gronov. virg. 150"; what do the American forms support by their growth? It seems to me that *rariflora* is more the plant of Linnæus (*i. e.* Gronovius) than *Behen* Drej., especially the var. *Caroliniana* Gray; and this Gray seems to indicate, for he says, "Extending northward, where it passes into *Bahusiensis* Fr."

This leads us to this difficulty. We can say *S. Limonium* L., but if we say *genuina*, we mean *rariflora*, and our var. *β.* is *Behen* Drej. I suppose the most inveterate lumper would admit there is some difference between *rariflora* and *Behen*, enough, anyhow, to constitute a variety. Prof. Babington does not even quote *S. Behen* (*Man. Brit. Bot.* ed. 8, p. 293), but has *S. Limonium* L. and *S. Bahusiensis* Fr.; this, if Syme is correct, is a direct contradiction of the Linnean herbarium, and Linnæus's reference to Gronovius. Thus it seems, if we write *S. Limonium* L., we ought also to say, a. *rariflora* Drejer, *β. Behen* Drej., whether as subspecies or varieties, according to individual opinions.

Some discussion has lately been carried on as to whether the description of a plant or the author's specimens (types) are of the higher value.* Of course, with cryptogamic specimens the difficulty must be great, as magnifying with high powers was not possible in early days; with flowering plants the difficulty is less; if the one contradicts the other, descriptions, I suppose, must carry great weight.

Subsp. *S. Behen* Drejer. *β. pyramidalis* Syme, *Eng. Bot.* vii. p. 161 (1867). *S. serotina* G. et G. *Fl. Fr.* 2, 740 (1850); *S. Limonium* Reichb. *Fl. Excurs.* 191 (1830), *teste* Syme. *S. Limonium* var. *α. genuina* Boiss. in DC. *Prod.* 12, 644, *teste* Syme. *S. Limonium β. serotina* (G. et. G.) Bab. *Man.* ed. 8, 294. *S. Limonium* proper, var. *S. serotina* Reichb.; Hook. *Stud. Fl.* ed. 3, 259 (1884). *S. Limonium* L. var. *pyramidalis* Syme, *Lond. Cat.* ed. 8, 21 (1886).

According to Syme, the plant distributed and figured by Reichenbach is not Syme's plant, but the *S. Limonium* L. var. *macroclada* Boiss. On the Norfolk coast Mr. Geldart says (*Ex. Club Report*, 1892, 378) that this comes into flowers about three weeks after the type. Grenier and Godron give "Aug. and Sept." for this, and "July and Aug." for the type. I agree with Syme that dry and wet seasons affect this form, but it clearly shows one of those states of *Limonium* that form a sort of connecting link with the larger forms of *S. rariflora* Drejer.

Statice binervosa G. E. Smith, *Eng. Bot. Supp.* t. 2663 (1830). *S. cordata* G. E. Smith, *Cat. Pl. S. Kent*, 18 (1829). *S. spathulata* Hook. *Brit. Fl.* ed. 3, 149 (1835), (non Linn.). *S. occidentalis* Lloyd, *Fl. Loire Inf.* 212 (1844), (non Desf.). *S. spathulata* Bab. *Man.* ed. 1, 245 (1843), (non Desf.). *S. Dodartii* Gir. and *S. occidentalis* Bab. *Man.* ed. 3, 261 (1851). *S. auriculæfolia* Vahl, *Symb.* 25, 1820; Bentham, *Handb. Brit. Fl.* ed. 1, 431 (1858). *S. binervosa* G. E. Sm., Hook. & Arn. ed. 8, 352 (1860). *S. auriculæfolia*

* "On the value of original specimens." O. Nordstedt, *La Nuova Notarisia*, p. 449, 1891.

Benth. *Cat. Pl. Pyren.* 163 (1826). *S. auriculæfolia* Vahl ex Hook. f. *Stud. Fl.* ed. 3, 259 (1884). *S. Dodartii* Gir. and *S. occidentalis* Lloyd; Bab. *Man.* ed. 8, 294 (1881). *S. binervosa* G. E. Sm. *α. occidentalis, β. intermedia, ? γ. Dodartii* Syme *Eng. Bot.* 7, 164 (1867).

The above is a fair sample of the contradictory nomenclature that our plant has passed through since separated by G. E. Smith in 1829.

How is it possible for an ordinary British botanist to understand the naming of this plant? We have here some of our best and most acute botanists using entirely different names, if not meaning different plants.

Sir J. D. Hooker, in *Stud. Flora*, ed. 3, says that "Boissier (who has examined Vahl's plant) refers this (in herb. Hook.) to *auriculæfolia*, and in DC. *Prod.* he refers the latter to his *oxylepis*."

Nyman says that *S. auriculæfolia* Benth. = *S. Girardiana* Guss.; and *S. auriculæfolia* Vahl = *S. densiflora* Guss. = *S. oxylepis* Boiss. He gives neither as British, yet uses Gussone's name, which must be some twelve years after Vahl's; and for our British plant uses Lloyd's name (1844).

There can be no pretence for saying that Smith's name included *Dodartii*, as his specimens were closely localised, and I have gathered his plant at his stations myself.

Statice is a difficult genus. The species are closely allied in many of its sections, and one who has studied the genus as Boissier has is entitled to great deference; but I do not think he should be blindly followed when there is any doubt, as there is in this case.

Most of our Floras do not mention any number of veins, but Brebisson (*Fl. Normandie*) gives 3 for this species, 1 for *Limonium*, and 3–5 for *oralifolia* Poir. In specimens from "Cliffs on the E. side of Great Orme's Head," gathered by Mr. C. Bailey, the leaves are unusually thin; they are 5-veined, and there are lateral veins both from the medial one and the others that connect the veins, and slightly anastomose. In authentic specimens of *S. Behen* Drejer there is only one principal vein (*i. e.* the medial one), the others being wholly lateral, again sending off laterals, being dispersed and anastomosing all over the leaf.

The drawings of the leaves of the two species given by G. E. Smith show the difference better than any other British plates I know of; but that of "*cordata*" (*binervosa*) is shown with three ribbed veins only, though he mentions five as occurring sometimes, and no laterals; which is correct only on very young or small leaves. Being held before a strong light, the laterals will be seen in a large proportion of the leaves, although very different in appearance from *S. Limonium*.

S. Dodartii Girard, *Ann. Sciences Nat.* sér. 2, xvii. p. 31 (1842). I cannot separate authentic specimens from the Abbé Letendre, from specimens from Hilbre Island, Cheshire (*R. Brown*). These I had named "v. *intermedia* Syme," and to me this variety presents a gradation of forms, at the one end representing *S. Dodartii*, and at the other almost *occidentalis* Lloyd; and other botanists are gradually coming to this opinion. On this see Dr. F. A. Lees's remarks in *Rep.*

Bot. Record Club, pp. 45–6 (1883); with which I generally agree, except as to "condensed dwarf form of *occidentalis*." *S. intermedia* occurs almost as tall as *occidentalis* (I have it 18 in. high).

To the distribution of the species of *Statice* I have little to add. The doubtful record of Cornwall for *S. Behen* may be definitely referred to W. Cornwall (*Linton*). For *S. rariflora*, Cheshire (*R. Brown*!), and Anglesea (*H. Griffith*!) may be added. Mr. Geldart regards the record of this as a Norfolk plant as doubtful. *S. binervosa* I have seen from the Isle of Man (*G. A. Holt*!). The Suffolk record for *S. caspia* Willd. seems to be an error, as no specimens are known from that county. It seems to be lost in Cambridgeshire, as I have not heard of its being found since the publication of Prof. Babington's Flora of that county (1860). There is a specimen from "Wisbeach, Sept. 1796, *J. Sowerby*," in Herb. Mus. Brit. Dr. Lees seems to accept S. Lincoln (doubtfully recorded in *Top. Bot.* ed. 2). The records by Sir Joseph Banks are in both S. and N. Lincoln; I have seen specimens from N. Lincoln only.

MIDDLESEX MOSSES.

By John Benbow, F.L.S.

I am able to supplement the list of Mosses given at p. 106 with several collected since, and a few which were inadvertently omitted at the time,—all of them not included in the *Flora of Middlesex*,—the total number of species being thus raised from 109 to 167. Some unrecorded Hepatics are also added, few in number—a result to be expected in so flat and highly cultivated a district; as these, however, were not specially sought for, many species have been probably overlooked. It is curious to note how very ancient are some of the records for quite common plants; for instance, there are none for *Racomitrium canescens* (growing abundantly near me on Uxbridge Common) since the middle of the last century, nor for such ubiquitous species as *Diplophyllum albicans* and *Metzgeria furcata* since Buddle's record nearly 200 years ago! Evidently the metropolitan county has been unaccountably neglected in this division of its flora. I am again indebted to Mr. J. E. Bagnall for his kind and willing assistance.

Systegium crispum Hedw. Downs, Harefield.

Hymenostomum microstomum Hedw. Meadow by Ruislip Reservoir.

**Dicranum montanum* Hedw. By Bayhurst Wood, near Harefield.

Fissidens incurvus Schw. About Harefield, &c.—*F. viridulus* L. About Harefield, &c. — *F. fontanus* Schimp. Tumbling Bay, near Jack's Lock.

Seligeria pusilla B. & S. Old chalk-pit in Harefield Park.

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* I also collected this plant recently about Black Park and Alderbourne Woods, near Fulmer, Bucks. Confirmed by Dr. Braithwaite.

Pleuridium alternifolium Kaulf. Old sand-pits, Northwood; meadows between Ruislip Reservoir and Eastcote.

Pottia intermedia Turn. Downs, Harefield.

Didymodon luridus Hornsch. Chalk-pits, Harefield. — *D. flexifolius* H. & T. Wood east of Ruislip Reservoir.

Barbula cylindrica Tayl. and *B. vinealis* Brid. Frequent.

Zygodon viridissimus var. *rupestris* Lindb. Ruislip Woods.

Orthotrichum Lyellii Hook. Park Wood, Swakeleys; Uxbridge.

Webera carnea L. Margin of Swakeleys' Lake.

Bryum pendulum Hornsch. Old sand-pits, Northwood. — *B. erythrocarpum* Schw. Common. — *B. Donianum* Gray. Sandy banks in lane by Highway Farm, barren; Mr. J. E. Bagnall also thinks it *Donianum*. — *B. turbinatum* Hedw. Canal-walls between Denham and Harefield Moor Locks, always barren. I am indebted to Mr. H. Boswell for its determination. — *B. argenteum* var. *lanatum* P. Beauv. Frequent about Uxbridge.

Thuidium recognitum Hedw. Chalk downs, Harefield.

Eurhynchium abbreviatum Schpr. Harefield.

Amblystegium irriguum Wils. Tumbling Bay, near Jack's Lock. Canal-walls near Ruislip Reservoir, &c. — *A. radicale* P. Beauv. By Swakeleys' Lake, Ickenham, &c.

Hepaticæ.

Lejeunia serpyllifolia Dicks. Lane by Jack's Lock.

Porella platyphylla L. Copses about Uxbridge and Harefield.

Cephalozia bicuspidata L. Frequent. — *C. divaricata* Sm. Park Wood, Uxbridge Common.

Scapania nemorosa L. Uxbridge, Ruislip Woods, &c.

Lophocolea cuspidata Limp. Old sand-pits, Northwood.

Chiloscyphus polyanthus L. Side of water-courses, Ruislip Woods.

Jungermannia pumila With. Harefield Common. — *J. sphærocarpa* Hook. Harefield Common.

Nardia Scalaris Schrad. Ruislip Woods.

Lunularia vulgaris Mich. Frequent.

REPORT OF DEPARTMENT OF BOTANY, BRITISH MUSEUM, 1893.

By William Carruthers, F.R.S.

The principal additions to the Herbarium during the year have been the great collection of *Diatomaceæ* formed by M. Julius Deby, and containing nearly 30,000 named slides, and the herbarium of the late Mr. Jenner, containing over 6000 specimens of Algæ.

The transverse section of the Wellingtonia (*Sequoia gigantea*) was received from California. It has a diameter of over 15 ft., and its annual rings show that it had lived for 1335 years. It is being prepared for exhibition in the Great Hall.

The additions to the collections by presentation have consisted of 4087 plants from Malaya, presented by H. N. Ridley, Esq.; 472

plants from India and Malaya, presented by Dr. King; 490 specimens of Indian *Cyperaceæ*, presented by C. B. Clarke, Esq.; 72 species from the Corea, collected and presented by T. H. Veitch, Esq.; 230 species from Nyasaland, collected by Mr. Whyte, and presented by Her Majesty's Commissioner, H. H. Johnston, Esq., C.B.; 52 specimens of woods and fruits of *Raphia*, from Nyasaland, collected and presented by J. Buchanan, Esq., C.M.G.; 1158 specimens from Sierra Leone, collected and presented by G. F. Scott Elliot, Esq.; and 27 species from the same country from H. H. Johnston, Esq., C.B.; 200 species from the Cape of Good Hope, by Messrs. MacOwan and Bolus; 74 South African plants from Mrs. Saunders; 138 plants from West Australia, collected and presented by J. H. Veitch, Esq.; 24 species from Gippsland, and 32 other Australian plants, presented by Baron von Mueller; 55 plants from West Australia, collected by Brewer, and presented by J. Cosmo Melvill, Esq.; 500 species from Siberia, presented by Arthur Bennett, Esq.; 295 plants from St. Vincent, collected by Smith, and presented by F. Du Cane Godman, Esq.; 29 species of Mexican *Malvaceæ*, collected by Palmer, and presented by the Department of Agriculture, Washington; specimens of several Chilian *Malvaceæ*, presented by Dr. Philippi; 133 specimens from Uruguay, collected and presented by O. V. Aplin, Esq.; 44 species from the Argentine Republic, collected and presented by Mr. White; 32 species from Canada, collected and presented by Professor Macoun; specimens of cultivated orchids from James Veitch, Esq., and from F. W. Moore, Esq.

A large collection consisting of 1097 cellular plants collected by Elliot in Dominica and St. Vincent was presented by the Committee for the Exploration of the West Indies; 166 Algæ from the Cape of Good Hope, presented by W. Tyson, Esq.; 51 species of Algæ from Cape Colony, presented by John Farquhar, Esq.; 22 Algæ from Natal, presented by Dr. Becker; specimens of Algæ from Professor Weiss, S. T. Da Costa, Esq., Professor Suringar, Professor Schmitz, and the Lords of the Admiralty; 174 Algæ from Australia, presented by Baron von Mueller; 140 Mosses of New Zealand, presented by Dr. Simmonds; 10 Mosses from M. F. Cardot; 65 species of cellular plants from Perak, presented by Dr. King; 9 cellular plants from Singapore, presented by H. N. Ridley, Esq.; and specimens of Fungi from Professor Boulger, W. W. Strickland, Esq., and C. N. Ellacombe, Esq.

The following additions have been made to the British Herbarium by presentation:—390 species presented by the Rev. E. S. Marshall; 317 species from Inverness, presented by Arthur Bennett, Esq.; 46 Rubi, named by Bloxam, and presented by the Linnean Society; 80 plants from Dorset, presented by J. C. Mansel Pleydell, Esq.; specimens of *Trachelium cæruleum* from Guernsey, presented by J. C. Melvill, Esq.; 2 species of *Asplenium*, presented by Edward Bennett, Esq.; a specimen of an aposporous Lady Fern, presented by C. T. Druery, Esq.; 21 Shropshire Mosses, presented by R. de G. Benson, Esq.; and 28 species of Algæ from the Clyde Basin, presented by George Brebner, Esq.

The following collections have been acquired by purchase:—25 specimens of British Rubi from the Rev. E. F. Linton; 690 plants of Nyasaland from Mr. Buchanan; 99 species of Cape of Good Hope plants from Schlechter; 40 species of Assyrian plants from Post; 530 species of plants from Mexico, collected by Pringle; 452 plants from Bolivia, collected by Bang; 12 fruits from Mexico, collected by Howorth; 299 plants from Swan River, Australia, collected by Brewer; 75 species of Canadian Mosses and 100 species of Canadian Lichens from Mr. Macoun; 150 species of Mosses from North America, collected by Renauld and Cardot; 150 species of Mosses and Hepaticæ from the Cameroons, collected by Dusen; 29 specimens of Sphagna from Labrador, collected by Rev. A. C. Waghorne; 200 specimens of Hepaticæ from France, by Husnot; 165 slides of British Algæ from Buffham; 50 slides of British Marine Algæ from Brebner; 25 specimens of British Algæ from Holmes; 100 slides of Fungi from Tempere and Dutertre; 100 Fungi from Saxony, by Krieger; 50 specimens of Economic Fungi, by Seymour and Earle; 100 specimens of Rabenhorst's European Fungi; 250 species of Fungi from Sydow; 25 species of parasitic Fungi from Briosi; 50 species of Fungi from Lombardy, by Cavara; and 29 cellular plants from Bolivia, collected by Rusby.

Specimens of seeds from the interglacial beds at Rotthus were presented by Professor Nehring, and fruits of Nipa, from the Tertiary strata at Sheppey, by Mr. Shrubsole.

SHORT NOTES.

Trichomanes radicans in Wales.—Some doubt has been cast (see *Journ. Bot.* 1871, 175) on the nativity of this plant in Wales. It may therefore be worth placing on record that I have quite lately found it in two distant districts in Merionethshire—one near Harlech, the other on Cader Idris. Other persons, including the late Mr. Backhouse, saw it in these localities in 1874. I purposely avoid giving further details of the localities, but they are not likely to be visited by tourists—one is by an inconspicuous stream, the other behind a waterfall.—John Percival.

[Mr. William Robinson, of Weston-super-Mare, sends for the British Museum Herbarium a specimen collected by himself in Merionethshire, in August, 1889, in a locality where he first found it about twelve years before. He knows of other places where the fern was growing some years ago.—Ed. Journ. Bot.]

Jacksonia Raf.—In this Journal for 1886 (p. 139) I followed Pfeiffer in saying that in this name Rafinesque intended to commemorate George Jackson, of whom (*l. c.*) I had written an account. I then said I did not know "how Pfeiffer ascertained the fact, as Rafinesque merely says, '*Jacksonia trifoliata, Cleome dodecandra* L.'" I am now inclined to think that Pfeiffer was wrong, and that Rafinesque intended to compliment John Jackson, a contemporary American botanist of whom some of our active friends across the water may

be able to tell us more. The little I know of him is found in the interesting but unindexed *Reliquiæ Baldwinianæ*. Writing from Wilmington on Aug. 20, 1817, Baldwin speaks of receiving "a packet of specimens collected for me by Mr. James (*sic*) Jackson in West Georgia." A year later he says, "A few days ago I had an interesting visit from John Jackson. I am pretty certain he has in his collection some new plants. Inform me when you can spare the time, and I will take you to see this worthy old lover of Nature. Let us go soon, as he speaks of one fine plant which will soon be out of flower." A month later (Sept. 18) Baldwin speaks of a plant* which Darlington, in a footnote, says they "had proposed to dedicate to our estimable friend John Jackson." It would seem from the above that Jackson was a horticulturist, and as he was then "old," he was no doubt known to Rafinesque in 1809, when the latter published the name *Jacksonia*.—Jas. Britten.

"Flora Corcirese" (*Journ. Bot.* 1893, 355). — Vous avez publié une notice sur l'ouvrage anonyme *Flora Corcirese* à p. 355 du *Journ. Bot.* 1893. Occupé moi-même sur l'histoire de la botanique en Italie, j'ai fait des recherches pour connaître l'auteur de dite *Flora*. Tout récemment j'ai reçu une communication de la part de M. Spiridion Zervós, ingénieur à Corfou, d'après laquelle on apprend que dans les archives de Corfou se trouve le document que l'auteur de la *Flora Corcirese* a été Domenico Mazziari, directeur alors (1834 environ) d'un jardin botanique qui existait à Corfou. Il était correspondant de Rabenhorst, auquel il envoyait des algues de la mer Ionienne (cf. Rabenh. *Fl. Eur. Alg.* iii. 330).—P. A. Saccardo.

British Bladderworts. — The season of 1894 has been as unfavourable to the flowering of bladderworts as the season of 1893 was favourable. For instance, where *Utricularia neglecta* abounded and was remarkably fine in the previous year, only a single poor flowering specimen could be detected last summer, and that after repeated search. In a less marked degree there was a similar contrast between the two years in the case of *U. vulgaris* and *U. intermedia*. The difference is no doubt mainly due to the abundance of continuous sunshine in 1893, and its constant interruption in 1894. Something besides withdrawal of light has to do with this; the frequent interference of cloud and descent of cold showers must greatly alter the mean temperature of the shallow pools and ditches in a rainy summer; and I suspect that, owing to the same cause, there is a decreased supply of the minute organisms on which the bladderworts feed, and to which they owe their vigour.—Edward F. Linton.

Avena elatior var. bulbosa (p. 248).—Dr. Masters refers to finding both the flowers in *Avena elatior* var. *bulbosa* hermaphrodite. The grass has been introduced here (Hobart, Tasmania), and I have always found both flowers hermaphrodite.—L. Rodway.

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* This was said to have been obtained from the mountains of Tennessee, but proved to be *Saxifraga crassifolia*.

Carex glauca = C. flacca Schreb.—The name of this common sedge is given as *glauca* by Nyman (*Consp.* 774) and Richter (*Pl. Europ.* 160) on the authority of "Murr. prodr. gœtt. 76 (1770)," and on the faith of such careful workers is likely to be retained. A reference to the work cited, however, discloses no such name, although Murray cites the description of Haller (Hist. no. 1408), on which Schreber founded his *flacca* and Scopoli his *glauca*. The plant must be called *C. flacca* Schreb. (1771), the earliest publication as *glauca* being in Scopoli's *Fl. Carn.* ed. 2, ii. 223 (1772). Mr. Jackson rightly gives this reference as the first publication of the name, but he says *C. flacca* Schreb. = glauca: had the dates been added to his reference, he would not have made this mistake. Those who look up Mr. Jackson's reference to *C. flacca* ("Schreb. Spicil. 669") will, however, be likely to miss the name, unless they know where to look for it. "669" is the number of the species, not of the page. The number occurs first on p. 62 of the book, where the plant figures as *C. pendula* of Hudson—a name which, as "*C. pendula* Schreb. Spicil. 62 = flacca" ought to have been in *Index Kewensis*, but is not. At the very end of the book, after "Addenda," "Conspectus," and an index, are two pages (not numbered) of "Appendix," and here we find: "p. 62 § 669 ita corrigatur: 669 *Carex* (*flacca*)," followed by a citation of Hall. 1408 and other authorities, all those previously given under *pendula* being omitted. The name of the plant must therefore stand as *C. flacca* Schreb. *Spicil. Fl. Lips.* Appendix, no. 669 (1771). Prof. Bailey (*Mem. Torr. Bot. Club*, i. 72) rightly points out the priority of this name, but his citation of "Addendum" instead of "Appendix" may mislead.—James Britten.

Lathyrus hirsutus in Herts.—I enclose a specimen of *Lathyrus hirsutus* which I gathered on a dry bank at Harpenden. It is an interesting addition to the county flora.—William H. Hutchings.

British Rubi again!—I hope shortly to publish in this Journal a paper on the Rubi list which is to appear in the forthcoming edition of the *London Catalogue*. As that list contains three new names of my suggesting, the following explanation is necessary now with a view to their admission into the *Catalogue*. The three names are *Leyanus*, *Purchasianus*, and *Marshalli*. They are for plants already described in my "Essay at a Key to British Rubi" (*Journ. Bot.* 1892) under the respective names of *Drejeri*, *obscurus*, and *Koehleri* var. *hirsutus*. *Drejer* and *obscurus* are misnomers, and can no longer be applied to our plants, which as yet are unknown on the Continent; while "*Marshalli* Focke & Rogers" is suggested for my "var. hirsutus," because the plant referred to (widely spread in England) is now held by Dr. Focke to be one of our best marked British "species."—W. Moyle Rogers.

NOTICES OF BOOKS.

Index Kewensis Plantarum Phanerogamarum Nomina et Synonyma . . . . . Confecit B. Daydon Jackson. Fasciculus III. [4to, pp. vii, 640 : *Kablikia—Psidium*]. Oxford : [Oct.] 1894. Price £2 2s. net.

The completion of the third part of the four into which Mr. Jackson's *magnum opus* is divided demands a brief record in these pages. A fuller notice of the first part was published in this Journal for 1893 (pp. 310–317), and most of what was then said applies to this recent instalment. The almost daily use of the work, so far as issued, for more than a year only intensifies the indebtedness which one feels to Mr. Jackson for the time and trouble spent upon his arduous undertaking; and the steadiness with which it is being pressed to a conclusion adds additional warmth to our gratitude. Whatever criticism may be passed on certain details of the work, nothing can detract from the benefit which Mr. Jackson has conferred upon botanists throughout the world by the compilation of this *Index*.

One of the few points for regret is that some uniform rule as to the spelling of names has not been adopted. All difficulty would be avoided, if the name as proposed by the founder of the genus were accepted; but Mr. Jackson halts between two opinions, with the usual result. For example, Robert Brown, when founding genera in honour of William Malcolm and of Matthiolus, wrote their names *Malcomia* and *Mathiola*. Subsequent writers have for the most part written *Malcolmia* and *Matthiola*, and no one has been much the worse in consequence. But Mr. Jackson restores the original spelling of *Malcomia*, while he follows the multitude in writing *Matthiola*. Here are two exactly parallel cases treated in different ways! Mr. Jackson restores the original spelling—*Montañoa*—for a genus which DeCandolle preferred to write *Montagnæa*.* Bentham and Hooker have *Montanoa*, and it seems doubtful whether the "tilde" can fitly be introduced into a Latinised form of a Spanish name. Mr. Hemsley (*Bot. Biol. Amer.* ii. 164) follows, and places all DeCandolle's species of *Montagnæa* under *Montanoa*, citing the *Prodromus* for each. Mr. Jackson quotes each of these as of Hemsley. Now, if the mere alteration of spelling justifies this course of action, it is certain that we cannot cite *Matthiola incana* of Brown, for he wrote *Mathiola*; and we shall have to cite Mr. Jackson himself as the author of such names as *Malcomia torulosa*, for Boissier, the founder of the species, places it in *Malcolmia*. Indeed, if we are to follow Mr. Jackson in his pursuit of absolute accuracy, it seems to me that we must attribute to him all the species with which he credits Mr. Hemsley; for it is he, not Mr. Hemsley, who places them under *Montañoa*.

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* "Nomen paulo emendavi ut melius cum nomine cl. doct. Lud. Montañs (pronunt. Montagna) nec Montano congruat."—DC. *Prod.* v. 564.

The discrepancies between the treatment of *Malcomia* and *Mathiola* are not yet exhausted. Mr. Jackson prints:

"Malcomia [R. Br. in] Ait. Hort. Kew. ed. II. iv. 121,"

and

"Matthiola R. Br. in Ait. Hort. Kew. ed. II. iv. 119":

and Brown's species are similarly bracketed in the former case, and printed without brackets in the other. Why? One succeeds the other in the same book; and every one knows that it is only because it is a matter of common knowledge that Brown named these genera that he is allowed to stand as sponsor for them. His name is equally absent from both: why then is it bracketed in one case and not in the other?

I think that in a work of this kind it would be best to abide by the spelling of the name employed by the founder of the genus, and I regret that Mr. Jackson should have altered the terminations of specific names to bring them into accordance with grammatical rules. When we read "*Erigeron acris* L. Sp. Pl. 864," we expect that to be the name as given by Linnæus, and not Mr. Jackson's emendation of it, correct as that may be from a grammatical standpoint. Those who wish to know how the author of a name actually wrote it must look up the original, and this, as tending to prevent quotations at second-hand, is perhaps an advantage in some respects.

This brings me to consider a charge which may arise from the use of the *Index* in a way not contemplated by its compiler. When we read, for example, that one species equals another,—"*Malva obtusa* Moench. Meth. 610 = sylvestris,"—we must not for critical purposes accept the statement without investigation. It would not have been possible for Mr. Jackson to investigate these matters for himself, and he has therefore followed some recognised authority on the genus. British botanists, for example, will hardly agree that "*Erythræa latifolia* Sm. Engl. Fl. i. 322 = E. Centaurium," and they may reasonably doubt the assertion that "*E. littoralis* S. F. Gray, Nat. Arr. Brit. Pl. ii. 338; Sm. Engl. Fl. i. 320 = conferta?," inasmuch as *conferta* is, according to the *Index*, confined to Spain. The book is an invaluable, even an indispensable, guide to the literature of a genus: to regard it as a critical enumeration of the plants of the world would be to place it in a position which the compiler does not claim for it.

I do not know why Mr. Jackson has not retained the oldest generic name, at any rate in recent cases, where no practical difficulty could result from so doing. It seems unreasonable, for example, to suppress the older *Phœnicophorium* in favour of the later *Stevensonia*—a course of action for which, as has been shown in this Journal (1865, 353; 1893, 95), there is no adequate justification. Whether Bentham had a right to alter his name *Martiusa* to *Martia* is very doubtful, and in the *Genera Plantarum* the older form is retained.

It would be too much to expect that every source of information had been exhausted: the wonder rather is that Mr. Jackson has neglected so few. *Portlandia gypsophila*, for instance, which he cites as "Macfad. ex Griseb. Fl. Brit. W. Ind. 324" will be found

in Macfadyen's *Flora of Jamaica*, ii. 206, and is apparently merely a substitution for *P. acuminata* R. & S., which is cited as a synonym. A good many names published in *Reliquiæ Baldwinianæ* are not taken up; and *Perdicesca*, the name which Provancher (*Fl. Canad.* 291) proposed to substitute for *Mitchella*, finds no place.* There are a good many names (only) in Jan's *Elenchi*, which a less comprehensive worker than Mr. Jackson would have been fully justified in ignoring. The names in Welwitsch's *Synopse explicativa* are not included, and his *Apontamentos* seems to have been insufficiently searched. These things are mentioned, not from any desire to criticise, but in order that they may be taken note of in the supplement which is to accompany the last volume. The printing of the last part is steadily progressing, and we may hope for the completion of the work about the middle of 1895.

JAMES BRITTEN.

Potamogeton Suecici Exsiccati. Fasciculus 1. By GUSTAF TISELIUS. Stockholm.

THE first part of this important contribution to the natural history of the genus *Potamogeton* is now being issued to subscribers; it comprises one-third of the whole work, and contains pp. 1–7 of title, index, and notes, and sheets 1–50 of beautifully dried and mounted specimens of Swedish Potamogetons. The whole is enclosed in a book-shaped case, so that the work can be placed on the library shelf; or the sheets of plants can be inserted with others already in the herbarium—a method we venture to hope that will not often be adopted.

It is to be regretted that only so small a number of copies as thirty can be issued. This limit is absolutely fixed by the small supply of some of the scarce forms obtainable by Dr. Tiselius. To remedy this as far as possible, he numbers each copy, and will print a list of subscribers in the last fascicle, so that students may know where the work may be consulted. It is also to be hoped, in furtherance of this object, that copies may be secured by the principal national herbariums of Europe.

As so many of the Scandinavian species of the genus have somewhat similar forms in the northern parts of Great Britain, and as nearly all these species occur with us throughout the kingdom, it will perhaps be of interest to readers of this Journal to reprint the list of the forms contained in the first fasciculus, and to add any remarks that may seem called for. But in the first place it will be well to remember that Dr. Tiselius has not attempted to give any synonymy, nor to offer a fixed nomenclature. Neither has he tried to decide what forms may be of hybrid origin, nor to draw a fast line between species and varieties or states. This is left in a great measure to the judgment of individual students and to future

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* "Nous avons changé le nom du genre *Mitchella* en celui de *Perdicesca*, dont l'étimologie a quelque chose de plus rationnel et dont la prononciation n'a rien d'effrayant pour des oreilles françaises" (!).—Prov. *Fl. Canad.* vii.

observers to determine. The species which are already accepted by botanists bear their usual names; any forms or varieties which are well known to botanists are also named as we find them in the works of Scandinavian writers on the genus (e. g. "*P. natans* f. *fluviatilis* Fries," a form known to be a mere *state* produced by even transient local conditions, but which, having been named, is also usefully included in this series); and under the true species are placed, in addition to their undoubted varieties or forms, each of which bears a name, a second series distinguished by Greek letters, which is composed of forms much further removed from the type, many of which may ultimately be found to deserve full specific rank. In the meantime botanists cannot have a safer guide through the intricacies of this most difficult genus than Dr. Tiselius, who is unrivalled in his knowledge of the living plants, and in his great ability in the selection and preservation of specimens.

1. *Potamogeton natans* L. (planta florens).
2. ,, (planta fructificans).
3. ,, f. *fluviatilis* Fr.
4. ,, f. *amphibia* Fr.
5. *P. sparganifolius* Læst.
6. *P. fluitans* Roth, f. *typica* Tis.
7. *P. plantagineus* Du Croz. f. *typica* Tis.
8. ,, f. *terrestris* Tis.
9. *P. polygonifolius*, Pourr. f. *largior* Tis.
10. ,, f. *angustifolia* Fr.
11. ,, f. *amphibia* Fr.
12. *P. alpinus* Balb. f. *palustris* Fr. (major).
13. ,, ,, (minor).
14. ,, f. *viridis* Tis.
15. ,, f. *longifolia* Tis.
16. ,, f. *borealis* Tis.
17. ,, f. *gracilior* Tis.
18. ,, f. *iterata* Tis.
19. *P. dubius* Tis.
20. *P. gramineus* L., f. *typica* Tis.
21. ,, f. *sinuensis* Tis.
22. ,, f. *normalis* (Fr.) Tis.
23. ,, f. *jemtlandica* Tis.
24. ,, f. *angermanica* Tis.
25. ,, f. *angustifolia* Tis.
26. *P. gramineus* L., f. *terrestris* Tis. (major).
27. ,, ,, (minor).
28. ,, *β. fluctuans* Tis. (major).
29. ,, ,, (minor).
30. ,, *γ. septentrionalis* Tis. (major).
31. ,, ,, (minor).
32. ,, ,, (minimus).
33. ,, *δ. debilis* Tis.
34. *P. nitens* Web. ?, f. *typica* Tis.
35. ,, f. *mälarensis* Tis.
36. ,, f. *speciosa* Tis.
37. ,, f. *curvifolia* Hartm.
38. ,, f. *jemtlandica* Tis.
39. ,, f. *subsimilis* Tis.
40. ,, f. *fyrisensis* Tis.
41. ,, f. *perfoliatifolia* Tis.
42. ,, f. *maritima* Tis.
43. ,, f. *vadosa* Tis.
44. ,, f. *terrestris* Tis.
45. ,, *β. prælongifolius* Tis. (major).
46. ,, ,, (minor).
47. ,, *γ. subtilis* Tis.
48. ,, *δ. intermedius* Tis.
49. ,, *ε. innominatus* Tis.
50. ,, *ζ. merloensis* Tis.

From the above list the following numbers are selected as being illustrative of the plan of the work, and in most instances as of special interest to British botanists.

1–4. *P. natans*, the usual British forms; 4. f. *amphibia* Fries well exhibits the phyllodes, which are always developed in the land form.

5. *P. sparganifolius* Læst. Widely differing from the Irish plant from Maam (Galway); for the present it will perhaps be advisable to follow Mr. Bennett in the *Student's Flora* (ed. 3, p. 535), and adopt the name *P. Kirkii* Syme for our plant.

6. *P. fluitans* Roth. Exactly the English form.

9–11. *P. polygonifolius*, deep to shallow water or land (?) forms. v. *pseudo-fluitans* Syme is not amongst these.

12–18. *P. alpinus*. Of these f. *longifolia* Tis. is a very remarkable plant, with the opposite leaves subtending the peduncles, 10–11 in. long. No. 18, formerly distributed by Dr. Tiselius as var. *spathulatus* Schrad., has hardly the spike or the fruit of that variety.

19. "*P. dubius* Tis., forma hybrida *P. gramineus* × *P. natans?*" (see note 19, p. 5; the first of the author's notes). Of these specimens, b., submerged leaves, resembles a form of *P. fluitans* that has occurred in Cambs. and Surrey; specimen a. is very like some forms of *P. crassifolius* Fryer. Probably Dr. Tiselius is correct in his estimate of the parentage of this hybrid form, which would be more naturally placed next to *P. fluitans*.

20–27. Beautiful forms of the *P. heterophyllus* of English botanists, which want of space compels us to pass over.

28. "*P. gramineus* L. *β. fluctuans* Tis.," a form which seems so distinct as to deserve specific segregation. See "b., planta junior foliosa," which approaches *P. falcatus* v. *major* Fryer, while "a., planta fructificans," is not unlike a plant distributed by the Messrs. Linton as "*P. Lonchites*," from the River Boyne, Ireland.

30. "*Potamogeton gramineus* L., *γ. septentrionalis* Tis. (major)," and 31, "*γ. septentrionalis* Tis. (minor)," are very near, if not identical with, the form figured in this Journal, tab. 317, as "*P. gramineus* L. v. *graminifolius* Fries," from Huntingdonshire.

34–50. "*P. nitens* Web.?" These seventeen sheets represent the most important part of Dr. Tiselius' work, and certainly will be the most interesting and useful to British botanists, especially to those who are able to collect in the Scotch rivers and lochs. Here, for the first time, we are able to see the fruit of *nitens*, produced on forms which are quite typical. Other fruiting forms are open to some doubt, and many students will be inclined to place them under "*gramineus* L." No one, however, has had such opportunities of studying *nitens*-forms in the living state as Dr. Tiselius, and his opinions on the specific status of these forms, if they do not command our immediate assent, at least demand a suspense of judgment until fuller investigation has proved them to be erroneous. With little doubt the greater part of these *nitens*-forms are hybrids, probably all are so; and they afford a valuable mass of evidence on the questions of variation and the production of new specific forms by natural hybridisation.

38. "*P. nitens* Web.?, forma *jemtlandica* Tis." A distinctly *nitens*-like form with a few fully developed drupelets.

41. "*P. nitens* Web.?, forma *perfoliatifolia* Tis."; formerly distributed by the author as "*nitens* f. *latifolia*." If this plant, as the author suggests (note 41), is *nitens* × *perfoliatus*, care must be taken not to confound certain British forms of typical *nitens* which have

been named "var. *latifolia*" with it. One, at least, of these broad-leaved British forms reverts to the type, and is a state probably equivalent to the barren autumnal growths of some *heterophyllus*-forms.

44. "*P. nitens* Web. ?, forma *terrestris* Tis." c. and f. on this sheet are exactly like land-forms of *P. varians;* a. and b. resemble the coriaceous floating leaves sometimes produced by *nitens* in deep water. Note 44 states that all the forms on this sheet were collected in a locality where no other species grew.

46. "*P. nitens* Web. ?, *β. prælongifolius* Tis. (major)." Sufficiently distinct perhaps to be raised to specific rank; a similar form has been found in Scotland.

49. "*P. nitens* Web. ?, *ε. innominatus* Tis." A puzzling plant, which may be *nitens* crossed with some form of *Zizii?*

Enough has now been said to show how much interest this beautiful series of plants has for British botanists. Two more parts of fifty sheets each will complete the work, which will then offer a standard for reference, or comparison with Potamogetons from the rest of Europe.

A. F.

Text-book of the Diseases of Trees. By Prof. R. Hartig. Translated by William Somerville, D.Ec., B.Sc., F.R.S.E., F.L.S. Revised and edited, with a Preface, by H. Marshall Ward, D.Sc., F.R.S., F.L.S., F.R.H.S. London: Macmillan & Co. 1894. 8vo, pp. xvi, 331; figs. 159. Price 10s. net.

The appearance of a translation of Hartig's valuable book is made more opportune by the eloquent appeal on behalf of British forestry in the recent address of the President of the Biological Section of the British Association. There can be no doubt that many of the facts and arguments of that address called for as wide advertisement as might be made, and to a nation distinguished by a love of trees and a particular artistic appreciation of them such claims can hardly be made in vain. It is, however, lamentable that lovers of sylvan beauty do not exclude the "blasted pine" and "withered monarch of the forest" from their catalogue of æsthetic charms, and there are many who transcend even Mr. Auberon Herbert in regarding a forest as a mere arena for plant strife without a forester to see fair play; whose æsthetic ideas are moreover as mixed as their metaphors. Such extreme views commonly proceed from ignorance of forestry and its methods, and are based on the absurd notion that a wood tended by a forester is a place swept and cleared of litter, and garnished with metal labels and announcements hinting at "thirty shillings or a month." However, such anarchists are fortunately in the minority, and lovers of nature care as little to see a sickly or wounded tree as an afflicted animal. The increasing number who regard forests from the economic point of view are, however, those to whom this book makes its special appeal, and it helps to make it clear that we must look primarily to botanists for their share in the care and management of forest affairs.

Prof. Hartig has the great claim on our attention that he has done more than any other one man to found a real science of plant pathology. Others greater than Hartig have performed far more in the elucidation of the life-histories of parasitic fungi, but Hartig has steadily and above all kept the special study of plant-disease foremost in his work with much brilliant and practical result. There is no better example of his success than this book, excellently translated by Prof. Somerville. Prof. Ward has added many useful footnotes, especially addressed to readers in this country, and his preface is interesting reading to those who desire a preliminary general view of the matter.

The Introduction gives an account of the development of the study of vegetable pathology, and is concerned with general considerations as to the causes of disease. These are classified into—(1) Diseases induced by Phanerogams; (2) Diseases induced by Cryptogams; (3) Wounds; (4) Diseases due to unfavourable conditions of the soil; (5) Diseases due to unfavourable atmospheric conditions. These become, in fact, the heads under which the contents of the book are arranged, and it is unnecessary to say that the fungi absorb the most attention. What strikes one most in the treatment of this part especially is the wide view taken—the practical view of the whole matter. One has become so much accustomed to the life-history of the fungus obtaining almost the whole consideration that it is a novelty to find the diseased plant placed in the foreground, and the general external conditions, apart from the parasite, made the subject of careful and searching observation. This is, in fact, the distinctive note of the book—the truly practical character of the author's care for the study of the disease, and the mode of its operation. Authors hitherto have concerned themselves with the plant merely as so much food for the fungus—naturally enough in the study of the morphology and physiology of fungi; here the study is the disease of the host. The book is no mere account of labours in this field; every page bears the mark of its author's ingenuity, skill, and independent thought. Very few books indeed among the recent additions to botanical literature contain so much real thinking combined with acute observation. It differs from most German text-books in the brief, lucid, business-like style of narration, in place of the long-winded, turgid sentences crammed with irrelevant pedantry one is accustomed to wade wearily through in search of the gist of the matter. Such is the original, and the translator has loyally preserved the style in the English version. In fact, one can hardly sufficiently praise the excellence of his performance of a task that is commonly a thankless one. There is always a strong inclination to regard a translation mainly as a thing to be found fault with, and it is therefore all the more pleasant to be able to say that this part of the work is well and truly done. The excellence of the illustrations adds greatly to the value of the book.

G. M.

ARTICLES IN JOURNALS.

Bot. Centralblatt. (No. 46). — J. G. O. Tepper, *Laccocephalum basilopiloides*, sp. n.—(No. 47). F. v. Mueller, 'Notes on Botanical Collections.'

Bot. Gazette (Sept. 15). — L. M. Underwood, 'Evolution of *Hepaticæ*.'—D. M. Mottier & G. F. Clinton, '*Pleodorina* in Indiana and Illinois.'—(Oct. 17). G. E. Davenport, 'Filices Mexicanæ.'—G. A. Rex, '*Cribraria minutissima & Licea minima*.' — J. E. Humphrey, 'E. Strasburger' (port.). — J. J. Davis, *Uromyces minimus & Doassansia ranunculina*, spp. nn.

Bot. Magazine (Tokio). — (Sept. 20). S. Hirase, 'Notes on the attraction-spheres in the pollen-cells of *Ginkgo biloba*.'

Bot. Zeitung (No. 16).—F. Hildebrand, 'Ueber die Heterostylie und Bastardirungen bei *Forsythia*.'—F. Buchenau, 'Die Verbreitung von *Oryza clandestina*' (1 pl.).

Bull de l'Herb. Boissier (Oct.).—J. Briquet, 'Indications d'Épervières (*Hieracia*) rares ou nouvelles.' — Id., 'Méthodes statistiques ou floristiques.' — C. Sauvageau, 'Variabilité de l'action du sulfate du cuivre sur l'*Isaria farinosa*.'—N. Alboff, 'Contributions à la Flore de la Transcaucasie.'—R. Buser, '*Cypripedium* ou *Cypripedilum?*'

Bull. Torrey Club (Aug. 20). — E. L. Sturtevant, 'Notes on Maize.'—E. G. Britton, 'Revision of *Bruchia*' (5 plates). — G. F. Atkinson, 'U.S. *Exoasceæ*.' — (Oct. 24). T. Morong, '*Smilaceæ* of N. & Central America.' — T. G. White, 'Revision of *Lathyrus*.'—F. H. Knowlton, 'New Fossil Hepatic' (*Preissites Wardii*, n. gen. & sp.: 1 pl.).

Erythea (Nov. 1). — J. G. Lemmon, 'W. American *Coniferæ*.'—A. Davidson, 'Californian Field Notes' (*Cruciferæ*).—E. L. Greene, 'Novitates Occidentales.'

Gardeners' Chronicle (Nov. 3). — N. E. Brown, '*Echidnopsis Dammanniana*.' — '*Momordica mixta*' (fig. 70). — (Nov. 10). W. Brockbank, 'Edward Leeds.' — J. G. Baker, *Eucomis robusta*, sp. n. — (Nov. 17). *Bolbophyllum perpusillum* & *B. Johannis* Wendl. & Kranzl., *Trichomanes solitarum* Jenm., spp. nn.

Journal de Botanique (Sept. 1).—J. Daveau, *Eragrostis Barrelieri*, sp. n. — A. Franchet, 'Plantes nouvelles de la Chine occidentale' (cont.).

Oesterr. Bot. Zeitschrift (Nov.). — R. v. Wettstein, '*Euphrasia*' (cont.). — A. Nestler, 'Untersuchungen über Fasciationen' (cont.). —J. Haring, 'Abnorme Kätzchenbildungen bei *Salix*' (concl.).— F. Kränzlin, 'Orchidaceæ Papuanæ' (cont.). — G. v. Pernhoffer, 'Hieracia Seckauensia exsiccata' (cont.).

Trans. Bot. Soc. Edinburgh (xx., pt. 1: Nov.). — D. Paul, 'Excursion of Bot. Alpine Club to Clova, 1893.' — A. D. Richardson, '*Ribes subvestitum* H. & A.'—J. G. Kerr & N. E. Brown, 'Botany of Pilcomayo Expedition.' — E. M. Holmes, '*Phacelocarpus epipolæus*, sp. n.' (1 pl.). — A. Robertson, 'Plants of Inverkeithing.' — G. Stabler, 'R. Spruce.' — G. C. Druce, 'Flora of West Ross.' — E. A. L. Batters, '*Acrosiphonia Traillii*, sp. n.' (1 pl.). — H. H. Johnston, 'Flora of Round Island.'

BOOK-NOTES, NEWS, &c.

Mr. Hugh Stannus has published in the *Journal of the Society of Arts* for October and November an interesting course of lectures on "Artificial Foliage in Architecture," which complements his course on "Decorative Treatment of Natural Foliage," printed in the same Journal for 1891. The lectures are well illustrated, and we are glad to learn that they will probably be reissued in volume form.

Prof. L. M. Underwood contributes an interesting paper to the *Botanical Gazette* for September on 'The Evolution of the Hepaticæ.' The author protests against the folly of many botanical teachers and text-books in making *Marchantia polymorpha* stand as a type of the *Hepaticæ*, and thus leading the unsuspicious student to suppose that Hepatics are all or mostly thalloid in character, instead of including a relatively small percentage of thalloid species. Surely it is to such false instructors as these that he refers when he says: "There are some microscopic botanists whose degree of specialization never permits them to look outside the limits of an apical cell." Proceeding to his subject proper, he traces the development of the principle of the alternation of generations from its simplest forms in the Algæ to the climax reached in the Pteridophytes; and reminds us that in the evolution of these latter "the line of descent must be sought, not in a comparison of the highly developed asexual phase of the one with the simple sporogone of the other [the Muscineæ], but along the line of the simpler sexual phase," where the degree of development attained is comparatively small. He divides the Hepatics into three groups, according to the three possible lines of differentiation they have followed, *viz.*:—(1) "The development of the thallus as such"; (2) "the transformation of the thallus into a leafy axis"; (3) the specialization of the sporogone at the expense of the thallus." The three groups are, (1) the *Marchantiales*, for which a suggestive pedigree-diagram has been worked out on p. 355; (2) the *Jungermanniales;* (3) the *Anthocerotales*, whose relationship to the other Hepatics, to the Mosses, the Leptosporangiate Ferns, and the higher plants is shown in a diagram on p. 360. Among the *Jungermanniales* are a number of thallose forms the majority of which produce their fruit, not terminally, but laterally. These are the "*Jungermanniaceæ anakrogynæ*" of Leitgeb and Schiffner; and it is these anacrogynous genera that Prof. Underwood proposes to separate off from the *Jungermanniaceæ* proper, which are acrogynous, into a family bearing the new name *Metzgeriaceæ*.

By the death of Nathanael Pringsheim on the 6th of October, our Linnean Society, which elected him on May 3rd, 1866, loses one of its oldest foreign members, and the science of plant-physiology one of its most able exponents. Born in 1823 at Wziesko, in Upper Silesia, Pringsheim began his student career in the medical school of his native province, proceeding subsequently to Leipzig and Berlin. Medicine was soon rejected for botany, and it was as a botanist that he took his degree of Doctor

of Philosophy at Berlin, where he resided for some years, and was in 1856 elected a member of the Academy of Sciences. In 1864 he took Schleiden's place at Jena, and during his four years there founded an institute for the study of plant-physiology, an experiment which was rapidly followed in other universities and colleges. In 1868 he was back again in Berlin, and, preferring to work on his own lines, started a botanical laboratory and a school of botanists, many of whom are well known as original workers and teachers. Pringsheim's most valuable work was in connection with the sexual process among the cellular plants, in which he followed up the work of Thuret and others. His researches on chlorophyll led him to a view of the function of the green colouring-matter suffused through the plastid which is not generally accepted among botanists. In estimating his work, we must not omit the well-known *Jahrbücher für wissenschaftliche Botanik*, started in 1857, in itself a small botanical library, the continued existence of which, and similar works, is evidence of a deeper interest in pure science than prevails in our own country.

Alban Edward Lomax died of cerebral inflammation at Liverpool on May 4th, at the early age of thirty-three. He was the son of a Canon of Ely, and settled in Liverpool as a pharmaceutical chemist, holding also the post of dispenser at the Northern Dispensary. Modest and retiring by nature, he led a secluded though active life, the whole of his leisure being devoted to botanical pursuits. He was an early riser, and much of his local botany was done before folk in general were up. He had a valuable herbarium, which was purchased at his death by the University of Liverpool; a large number of the specimens were acquired by exchange, Mr. Lomax having had an extensive correspondence with Continental and American botanists. He spent his holidays in some unfrequented locality on the Continent, principally in Spain, from which country he described a new *Cerastium* in this Journal for 1893 (p. 331), his only contribution to our pages. He published notes from time to time in *Science Gossip*, and was an active member of the Watson Exchange Club.

By the death of Louis Figuier, which took place at Paris on the 8th of November, in his seventy-fourth year, we have been deprived of one of the most indefatigable popularisers of science. He wrote attractive and beautifully illustrated volumes upon almost every branch of science, many of which have been translated into most European languages. His *Histoire des Plantes*, which appeared in 1865, beautifully illustrated by Faguet, was translated into English and edited by the notorious C. O. Groom—who subsequently styled himself C. O. Groom Napier, and later, "H.S.H. the Prince of Mantua and Montferrat"—and published in 1868 under the title of *The Vegetable World*. Some of the humours of this ridiculous translation are quoted in this Journal for 1872 (p. 347), in the course of a notice of a new edition which appeared in that year. This latter, which was revised by the present Director of Kew Gardens, was an excellent book, and should not have been allowed to go out of print.

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